

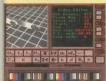
**TIPS OF
TIPS**
FOR YOUR
MACHINE

see pages:
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NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

AMIGA



NAKED VIDEO

Datel's stunning new
Digitizer II on test

NeXT



BLACK POWER

Is this the sexiest
machine ever made?

GAMES



LIFE & DEATH

Virtual surgery comes
to your Amiga & ST

SEGA'S SUPER MEGADRIVE!



Why this
top secret
Mega-CD
will smash
Nintendo's
Famicom

Full story pages 4&5

PLUS: IBM'S 12 NEW PCs
AND there's DOS 5 and a notebook too!

**SPECIAL
REPORT!**

THE DIFFERENCE ENGINE

A Victorian computer is
brought to life — p55



future
PUBLISHING

The guarantee of value

Frontend

attend Frontend Frontend

Just what is going on out there in the big wide world of computing? And where do you find it in bite sized chunks? Why here of course. It's in Frontend first!

SUGAR BID TO SAVE SPURS

It was confirmed this week that Alan Sugar is to invest some £12 million of his own money in a rescue bid for

troubled Tottenham Hotspur football club.

Sugar's bid, for the club, which his father took him to see play as a child, is expected to be made in collaboration with Spurs' manager Terry Venables. There are two aims: first, to pay off Spurs' £11 million debt to the Midland Bank. Second, to wrest control of the club from Paul Bobbitt, ex-chairman of the Tottenham holding company, and Irving Scholar, the club chairman. These two men have a 37 per cent share in Spurs.

Sugar, ever reticent to talk to the press, was unavailable for comment. A spokesperson for Tottenham Hotspur was equally tight-lipped. A wall of silence also met enquiries to the office of Nat Solomon, chairman of Tottenham Hotspur PLC.

There is no doubt that Sugar has the money to back up any such deal. According to a Sunday Times survey, he is the 46th richest man in the UK, with a personal value of £13.7 million.

Computer companies and first division football already have a good relationship. Sharp sponsors Manchester United, NEC sponsors Everton, Brother is linked with Manchester City, Tulip with Crystal Palace, and Commodore has strong ties with Chelsea.

The benefits to Sugar of buying into Spurs could be immense. According to Commodore's press and public relations manager Alan Ball: "Short sponsorship means your company name is on national television and in the press nearly every week." ■



• Terry Venables is joining forces with Alan 'Sugar' in order to save ailing Spurs from receivership. Will this move reap even larger rewards for Australia?



Computer industry watchdog, Federation Against Software Theft (FAST), is if you're thinking of buying some illegal software in the near future. You had better think FAST.

Make a FAST bust

has been hard at work once again. In a week of action against software pirates, FAST made 16 raids in the UK and netted 15,000 disks.

The raids took place in Cleveland, Northwold, South Wales, at a car boot sale at Radnor, and in Cardiff where the biggest single haul of 5,000 programs was made.

All of the programs confiscated in the raids were described as 'Severe Virus' for most 8-bit and 16-bit machines. ■

DUTCH A DAM SHAME

Phone 'phreaks' in Holland have come up with a way of making international calls for free. And they've even published the details in a magazine titled *Hack-U*.

The method relies on special telephone numbers, available in several

countries worldwide, and provided free of charge for people away from home wishing to make use of the operator in their own country. Phreaks dial the free number, wait for the 'clear forward' tone to sound and then interrupt it before the operator answers by using home-made electronic 'blue boxes'.

Once the signal has been intercepted, another 'terminator' signal is sent, followed by a 'voice' signal from the box. This allows phreaks access to the lines, thus enabling them to call anywhere in that country.

The computer at the exchange meanwhile is under the impression that a legal conversation is going on between the caller and the operator. ■

Shelter offers pet solution

In these hectic days, when the canine is becoming more of a walking and personal mate rather than man's best friend, it is good to know that computers can help.

The Wood Green Animal Shelter in London has set up the National Pet Register to keep track of dogs. The system has the capacity to maintain records on 80 million dogs. People wishing to be registered pay a £5 fee, £2 of which goes towards their care. Details of the pet's look and age are covered - and the owner's name is then entered in to the computer.

The animals are then given registration tags which bear the telephone number of the shelter. Then if the pet goes missing, the person who finds it can telephone the centre which will either pay the dog's return to the owner, or will give the address of a person who will look after the dog or cat until the owner is traced. ■



• ES will cover you and your pet from loss or damage - just who the damage could be done to is another question.

GET REAL! • GET REAL! • GET REAL! • GET REAL! • GET REAL!

STRESS SENSE

Stress-out pilots will be benefiting from a new Artificial Intelligence (AI)-based system which uses Ultrasonic to measure the flow of blood to the brain. If unusual changes are noted in this flow, then decision making is transferred to another member of the crew.

LABOUR'S COMPU-NUNDRUM



• Neil Kinnock's Labour party may be doing well with the public in the polls, but its members are not too pleased with the way Labour's main computer is handling their own internal affairs.

Labour MPs are hopping mad over the antics of a rogue computer based at the party's Walworth Road headquarters in London.

The master micro, which is at the centre of the National Membership Scheme and used in recruitment and membership co-ordination, lost the details of potential Labour supporters. To compound this error, the computer 'left' numerous cheques uncancelled.

Waiting list

The mistakes came to light when a number of local Labour party

members contacted the headquarters to complain of a six-month waiting list for membership cards.

Labour's computer system was installed in 1985 to pep-up flagging membership numbers following its 1987 election defeat.

Since then Labour support has risen from 260,000 to 310,000 members.

However, there is a growing feeling among party supporters that the number could be a good deal greater if the wayward computer was not causing so many unnecessary delays. ■

SHOOT FROM THE LIP

• Commodore has given out misleading information. They would have us come to Kodak for more information on Photo CD. Their system (COTV) cannot play Photo CD's - Sandy McKenzie of Philips Multimedia commenting on Commodore's claims that COTV is to be Photo CD compatible. Interestingly, Philips is collaborating with Kodak on the Photo CD project.

• "2.88 is double 1.44MB. And if tomorrow you were twice as high as you are today that would seem to be a significant advance". So said Bill McElrath of IBM, telling cat tales?

• "It breaks down the boundary between reading and writing". Mark Bernstein, chief scientist of American firm Language Systems, commenting on the StorySpace hypertext tool for the PC.

22 June 1991 • Express 137

COVER FEATURE

Sega's Secret New Megadrive

The whole world's going crazy over CD and tomorrow's consoles are changing. Is the new Sega the most future-proof option for you?

— see pages 48.5

REVIEWS

The NeXT is finally here — has it been worth the long wait?

A 68040 chip, 400Mb harddisk and more than Jean Paul Gaultier — but is it for you? — page 49

Sick of the flicker?

The cheapest way of making your Amiga look a whole lot better — page 52

EVERY WEEK

News

All the top stories — pages 4-8

What's New

Brilliant photo manipulation software, super VGA monitors, tiny 486 motherboards and 386 notebooks — page 11

Games Week

Hot tips and news, plus *Life&Death* review — page 50

Attention! Amiga and ST owners

HATE is the name of the game. And it could be yours. Turn to page 58

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HATE-filled giveaway scoop special

EXPRESS GIVES THE GAME AWAY

In a remarkable publishing coup, *New Computer Express* next week becomes the first weekly magazine in the history of the world to offer its readers a full game — probably

Next Thursday, along with your weekly guide packed to the proverbials with first news, first reviews and best buys, you'll also find HATE, a brutally addictive game for both the Amiga and the ST.

DON'T DELAY, ORDER YOUR COPY TODAY

The last thing we want is for our regular readers to miss out, so fill in the form on page 58 right now.



• Do I hear £29.99? Do I hear £29.99? I'm rubber! I'm steel!

• And inside the magazine there's a brilliant playing guide (and even a set of cheats!) that'll help you get the most from your complete game. Remarkably the whole deal will set you back just £1.50. We reckon that's the best bargain since the United States bought Alaska from the Russians for ten cents and a bag of spuds.



• The bargain of the year: HATE, plus Express, plus playing guide, plus cheats — all for just £1.50. The best thing you've ever spent!

• So reserve your copy right now. There's a form on page 58. We expect this issue to sell out by about lunchtime on Thursday, so don't come crying to us saying you weren't warned. See you next week!



• HATE: a brilliant magazine, a complete game and a playing guide and set of cheats, all for £1.50? Is this some kind of a wind-up? No, it's merely an Expression of our unbounded generosity.

Funtabulous 16-bit bargain offer

Mega-CD, Super Famicom, Neo Geo and PC Engine – as the latest consoles

DOES THE CD CONSOLE

While the competition between CDTV and CD-I may be the more familiar battleground of interactive Compact Disc, the war between console manufacturers is also breaking into the CD-ROM market. So, as Sega announces its new Mega-CD system, *Express* takes a close look at the increasingly serious side of a hardware industry based on fun...

After revealing its new Mega-CD system to selected journalists at Chicago's CES show two weeks ago, Sega finally unveiled the machine at Tokyo's Toy Fair last week.

Designed to sit beneath the Megadrive, the CD add-on is expected to sell for £199 when it is released in the UK later this year. A spokesman for Sega's UK distributors, Virgin Mastertronic, international director Barry Jakuta, told *Express*: "It won't be shown at this autumn's CES show, however limited numbers will be available before Christmas and it is possible that it will be launched here in the first half of next year."

The Mega-CD runs standard 5-inch compact discs which are capable of storing 540Kb of data. A whopping 128K RAM cache allows code to be

buffered into memory for fast screen updates, thereby making drive access appear seamless.

With software due to go on sale in Japan this October, 27 third party software developers have already announced they will be producing forthcoming CD titles for the unit. In addition, the drive comes up the interesting possibility of karaoke titles.

Sega is simultaneously releasing a Mega Modem and Mega Video which can be interfaced to the new system to offer users 'sing-along-a-CDs'. Using the modem to download the latest hit songs from a Sega database, the code could be stored using cartridge back-up devices like the Sega Doctor, currently only available in Japan. Sega's Mega-CD has been expected since the original launch of the Megadrive which coincided with the release of a

CD-ROM unit for the PC Engine console by archrival NEC. Although the PC Engine is based on 8-bit technology, sufficient titles found their way to CD format to make the medium a serious contender in the fun and games stakes.

Sega's announcement comes hot on the heels of the US launch of Nintendo's Super Famicom, another 16-bit console offering superior technical specifications, but lacking the sort of substantial software availability Sega has managed to attract for the Megadrive over the last 18 months.

Indeed, Sega has more than a longer market presence to its advantage.

Both the US and Japan are relatively barren of the 16-bit games programming talent readily available in Britain and the rest of Europe with exclusive



• Sega's Mega-CD – not launched officially anywhere outside of Japan. The games industry denies all knowledge, but *Express* knows the story.

development contracts secured by the major carting houses. As the PC Engine has no official European presence and the new Nintendo Famicom won't arrive

here until at least this Christmas, Sega will be confident it can further clean up in both hardware sales and development contracts.

Why the consoles and Compact Disc had to combine • Screen to

News of Sega's Mega-CD confirms the logical next step in the evolution of the games console. Data storage and speed of access rather than increased processor power are the new angles being taken by the manufacturers.

The market is not a new one. It dates back over a decade with the release of Atari's VCS2600 in 1979.

In 1989 the estimated value of the market was £1.2 billion worldwide. Today this stands at an estimated £2.2 billion. This figure is made more astounding by the fact that the mid-80s saw the value more than halved from a peak of £1 billion to around £400 million.

Atari, still selling its consoles, was severely damaged by this state of affairs. In fact it had not bothered re-entering the market until last year with the Lynx, and this year with leaked news of the 64-bit RISC-based Jaguar machine.

The current console arena is badly contested by the Japanese duo of Nintendo and Sega, with other players such as NEC, Atari, SNK, and Commodore also competing for market share. The main contenders for console kingship are detailed below.

Neo Geo from SNK (marketed by DGM Ltd in the UK)

PRICE: £299

This was the 'big wow' launch of 1990. The specifications of the Neo Geo are stunning, but unfortunately was the price tag of £450 until now just in as we went to press of the official launch and price cut to £299 in the UK. This combined with the fact that less than 20 games are available for the machine and they cost upwards of £200 has made the Neo Geo a console for collectors and real enthusiasts. It is a sleek black piece of



• Neo Geo from SNK

hardware which looks more like an executive desk accessory than a toy.

PROCESSORS: 280 and 68000
COLOURS: 85,525 – 4,096 on screen
RESOLUTION: 640 x 250
MEMORY: 132K
SOUND: Stereo 15-voice chip array

Megadrive from Sega

PRICE: £179

The Megadrive is the most widely available 16-bit console in the UK. Launched in the UK last September it has already sold over a million units



worldwide.

Sega has tied up software agreements with many major UK developers, most notably Electronic Arts. It also has licensing agreements with Walt Disney (Mickey Mouse). Sega is taking its competition with Nintendo extremely seriously, some might say personally. The latest Megadrive title, *Smile*, the Megadrive has been published not just as an all-chip, all-in-one 16-bit game, it is literally a Super Mario Brothers beater.

PROCESSORS: 68000 and 280
COLOURS: 612, 64 on screen
RESOLUTION: 32 x 224
MEMORY: 128K
SOUND: Stereo, 12-voice FM chip

PC Engine/Turbo Grafx from NEC

PC ENGINE £200, TURBO GRAFX £200

Still not officially available in this country, the 8-bit PC Engine and 16-bit TurboGrafx, is the only other console available which makes use of CD-ROM technology.

Priced around the £200 and £300 mark respectively, from grey importers and some independent dealers, the PC Engine was deliberately held back from the UK and European markets by NEC. The reason for this was put down to poor UK sales in 1990. However, it is rated as one of the hottest properties in the console world.

PROCESSORS: Zleg/TM0
COLOURS: PC Engine 512, TurboGrafx 4,096
(32 on screen)
RESOLUTION: 256 x 216

are lined up for the lucrative leisure market, Express asks:

WAR START HERE?

Console confusion and corporate politics

Sega's Mega-CD console is not going to have the market to itself. Its arch-rival, Nintendo, is also planning to enter that arena.

However, confusion and corporate politics are rampant around the Nintendo camp in terms of a CD-based console launch.

Japanese consumer electronics megagiant Sony had announced that it and Nintendo were to develop a CD-console called the Play Station. However, Nintendo feels differently about this, and has publicly denied that it will support the project. The most obvious sign of this discord was the signing of a deal to develop a CD-XA system with Philips at Chicago's Consumer Electronics Show (CES) three weeks ago.

Nintendo America's president, Howard Lincoln, announced the Philips link-up to stunned observers who had been awaiting the Play Station news. The only comment forthcoming from either Nintendo or Philips on the matter was that Sony would continue with the Play Station, but would not be supported by Nintendo.

The Philips/Nintendo deal was signed and sealed overnight at the CES. Although it concentrates on the CD-i (Compact Disc Interactive) side there are definite signs that a console collaboration is in the offing – possibly in the form of a cut-down CD-i style console available at low cost. A major signpost here is that for the first time in its history, Nintendo has released the licence for its



• Howard Lincoln of Nintendo stunned observers at Chicago's Consumer Electronics show with the announcement that his company were to develop CD technology with Philips not Sony.

highly successful Super Mario Brothers game to Philips. Only time will tell, as Nintendo and Philips are remaining tight lipped about the entire affair. It

Speaking to UK trade weekly CTE, Sega's US President, Tom Kalish claimed "the new CD-ROM system is technically superior to any other system on

the market", concluding, "Sega will lead in CD-ROM just as the Megadrive leads the 16-bit market". Meanwhile Sega UK is remaining quiet about the new

launch, preferring to concentrate on the marketing and development of handheld Gamegear and maintaining the market presence of the existing Megadrive. It

EXPRESS COMMENT

SEGA VERSUS NINTENDO

It's always been an intriguing battle and one in which Nintendo always seemed to have the upper hand. The MegaDrive versus the Super Famicom. The Sega Mega-CD versus the Play Station. Who will win? We really need to re-define the question. Right now, outside of Japan, it is the MegaDrive versus the NES. 16-bit against 8-bit and historically we know which format will win that one.

Nintendo has only just launched its re-badged 16-bit Super Famicom (called the Super NES in America) to the Western world. Sega has been there for a year and now has an estimated one million users. In the United States, which is the springboard into Europe and the burgeoning Eastern European markets, Sega is holding an extremely firm and positive position.

Nintendo's plans for a CD system have been thrown into disarray by its switch from Sony to Philips (see Nintendo does what Sega don't!). Not only that, but for the first time in its history Nintendo has released the licence to its all-conquering Super Mario. Why? Was it pushed or did it jump? Has Nintendo suddenly been forced to realise that 8-bit supremacy is not going to forge the future, but that hardware evolution and communication with other companies are the keys? Who knows?

Sega's Mega CD has two major advantages over any likely competitors: it is available now, and it can make use of the Megadrive's 16-bit market share (estimated at 75 per cent in the US). This last factor is massively important in a recession-hit world where consumers are being forced to make the most of what they have, rather than junking it in favour of the latest marvel.

If Sega can actually get its Mega CD into the shops outside of Japan, in time for the Christmas market and at a sensible sub-\$250 price tag, then the \$299 Super Famicom could look like a pretty good deal. But Nintendo has one big thing going for it. CD-i. Absolutely track leads full of the stuff.

So, while the Mega CD may well smash the Super Famicom, unless Nintendo turns its corporate vision away from its history, the 8-bit ghetto, and its inability to communicate with the rest of the world, the console war could get very hot. The sheer financial muscle of the world's largest computer entertainment company. It may well be that in the final analysis, it's not your pedigree that counts – it's your last product. But if you have billions of dollars at your disposal when the going gets rough, you won't find it too difficult to get through. ■

to – the hottest consoles on the block



• PC Engine/TurboGrafx from NEC

MEMORY: PC Engine 728 KRAM
TurboGrafx 160K

SOUND: Stereo six-voice chip

Super Famicom (now rebadged outside Japan as the Super NES) from Nintendo.

PRICE: APPROX £150

Nintendo has held back from the 16-bit console market outside its home turf, with the Super Famicom only being launched in the United States three weeks ago. This is a year after Sega's Megadrive launch.

However, the Super Famicom is generally accepted as being a highly desirable piece of console kit. Nintendo is ensuring this with advertising only which reads: "Formerly called 16-bit consoles are only warmed up 8-bit".

It is known that software developers in the UK are working on products for the Famicom, however none of these people are prepared to talk about any of the details. Whether this is due to non-disclosure agreements or pure lack of knowledge is debatable. However, one thing is certain – the UK will not get an official launch of the Super Famicom until at least 1992.

The burning question is the console war, however, is whether or not Nintendo can support the Super Famicom with a suitable CD-ROM drive before Sega manages to consolidate that area. Plans are afoot.

PROCESSORS: Nintendo proprietary 16-bit chip
COLOURS: 32,768. 128 on screen
RESOLUTION: 256 x 224 or 512 x 448
MEMORY: 128K
SOUND: 16-channel digital stereo



• Super Famicom from Nintendo

Should you buy a hi-fi CD player?

The emergence of CD-ROM players for hi-fi machines – owners of 20s, PCs, Amiga and Macs can buy readily available off the shelf units, while Amiga owners need only wait until September, means that music aficionados would be better off buying one of these rather than a dedicated CD player. For why duplicate your cash when you can buy a box set for around £200 that will serve both to your machine and to your hi-fi?

Every CD-ROM player has a pre-amplified headphones output which can be directly connected to

your system. Of course, it all depends on the level of quality you expect from CD music. Today's state-of-the-art hi-fi systems may offer multi-disc cassettes, but stream processing and digital output, but even the cheapest CD-ROM drives invariably offer distortion. To really hear the difference in quality between a typical CD-ROM and a high-end CD player, you'd have to spend about £2,000. You would buy one of those hi-fi magazines which would compare you with thinking there was a difference. ■

NIBBLES

Amstrad offering

Amstrad is launching a version of its 386SX with a 40MB hard disk. Assuming the machine, Amstrad's sales and marketing manager, Malcolm Miller, said: "The machine is designed to increase sales in the corporate and public sector." The basic unit costs £3,761. A version with VGA monitor costs £1,596.

Going down

Kyocera has cut prices on selected laser printers by more than £1,000.

The standard F-2000S comes down from £3,490 to £2,290. The 11 pages per minute and the single line versions move from £3,350 to £2,290, while the dual bin F-3300 falls from £4,290 to £3,690.

Commenting on the changes, Kyocera's marketing communications manager said: "We naturally view our price reductions as a positive move towards gaining ground in a highly contested market."

For more information call 0734 311530.

DOS day out

The launch of DOS 5 means that people have to get used to a new operating system where some are only just getting to grips with the last version. To this end, the IBM PC User Group is running half-day workshops for DOS 5 training. Not only do you get expert advice on the new PC operating system, you actually get a free copy of it thrown in.

The workshops cover installation, functionality, and problem solving. Each class will consist of a maximum of six people. The cost for non-members of the group is £126. For more information call 081-863 1291.

Pay day blues

A survey carried out by Economies Claims states that programmers, and other computer-related staff, saw their pay rising by an average of 8.5 per cent last year.

This is the lowest increase since 1987 and is accompanied by a fall in the number of respondents. The survey also pointed out that trainee programmers could expect to earn £37,750 in the first year, £42,500 in the second, and £15,000 in the third year of employment.

Amiga video views

Three new Amiga video devices have been launched by Derby-based Syntronix - for editing, recording, and digitising.

The Editman which works from a mouse-driven software interface is capable of controlling domestic video and Camcorders, according to the company. Functions include insert and Autodub. IFT format files can be edited with no need for additional genlocking.

An RGB to S-VHS recording interface is next up. Once again, the claims are grand: "Recording quality surpasses that of 5 equipment genlocks which are an

unnecessarily expensive alternative that can be avoided."

The third device is an RGB digitising interface. This is capable of "grabbing" frames from video in real time.

The Editman costs £584.44, the recording interface £293.95, and the digitiser £234.94. The products are only available directly from Syntronix on 0332 258422.

The reason for this, according to MD, Gary Jara, is: "We're not happy about the retail trade. They are not set up to deal with the 1990s. Customers know more about the products than the shops do."



The Lotus challenge

Lotus Turbo Challenge. It is due to hit the streets in October. The previous version of this racing simulation was rated as one of the best games of 1990.

Version 2 includes: new four player mode, four machine links

for simultaneous play via modem, varying weather conditions from rain to fog, and a choice between the Lotus Esprit or Optic car.

The games will be available for both the ST and the Amiga. No price has been announced as yet. ■

Acorn leaps into PC market with sub-£100 emulator

ARCHIMEDES PC

by Paul Lewis

Acorn computers has upgraded its PC Emulator for the Archimedes. The Arc can now run IBM PC software in a window on its desktop, and store it on a hard disk.

Even Acorn does not pretend that an Archimedes with the emulator is a substitute for a dedicated PC. However, it does extend the range of software available to Arc users. The PC market is far greater, and cheaper, than the younger Arc.

The new Arc PC Emulator replaces the original version which was widely criticised for being very slow, only emulating CGA graphics and not running in a window under the Archimedes desktop operating system (DOS, Mac OS).

The new version 1.6, released this week, runs exactly like other Archimedes applications.



Microsoft Word 5.0 and Planolam, an Archimedes wordprocessor, running together.

However, data can be now transferred from PC packages into native Archimedes applications by simply dragging an icon around the desktop.

The software now emulates Enhanced Graphics Adapter (EGA) graphics and runs most major PC packages such as Microsoft Word, Lotus 1-2-3 and The Secret of Monkey Island adventure game.

A special mode, EGA+, enables it to cope with a lot of



Return from Monkey Island and an Archimedes spreadsheet running alongside each other.

software that would normally demand VGA graphics. Under EGA+, even Microsoft's new graphic user interface (GUI) Windows 3.0 and compatible products will run.

In order to store the PC-compatible applications, and files, Archimedes users who have the emulator can create a PC partition on their hard disk. This appears in the form of a file on the desktop. A separate utility called MultiFS, licensed from

Arise systems, enables the Arc to treat this file and its floppy disk drives as MS-DOS equipment with which to format, load and save MS-DOS files. Once the partition has been made, and the system configured, all the file and disk housekeeping can be carried out even if the PC emulator is not running.

The performance of the new emulator is somewhat disappointing, however, in that on an ordinary Archimedes it runs at about the speed of a PC XT with an 80386 processor (approximately 8MHz). On an Archimedes with the ARM3 version of its main processor it achieves about 2/3 the speed of an AT 80286 machine (6-20MHz). Games are tedious and mouse control can be jerky.

The Acorn PC Emulator 1.6 costs £39. The company is also running a deal with a £29 trade-in on the previous version. Call Acorn on 0223 245200, or

Big Blue bites the Apple

Apple Computers and IBM held a meeting in New York earlier this month which would have been inconceivable two years ago.

According to the Wall Street Journal, the aim at the discussion was to lay the groundwork for... an exchange of technologies that could change the balance of power in both the semiconductor industry and workstation market.

The discussions concerned Apple using IBM RISC (reduced instruction set computer) technology in its next generation of machines, while IBM would give a licence for Apple's highly respected operating system.

Apple has already held talks with two other major players in the RISC market, Sun Microsystems and Hewlett-Packard. And, as Express reported in December 1990 (issue 109), it has forged agreements with UK-based Acorn

computers on the same subject.

IBM could solve three problems if the deal comes to fruition. If Apple takes up an option to use IBM RISC, IBM's profile as a developer would rise. In return for RISC, IBM is likely to gain a licence to Apple's graphical user interface (GUI), a system which has won more friends and customers for the Macintosh range of computers.

The consensus amongst observers close to IBM, is that this would be added to IBM's Q/52 range of computers in order to bolster its flagging image.

Finally, and more importantly, IBM could move away from Microsoft. Indeed an unnamed IBM executive told reporters in New York: "It is no secret that our relationship with Microsoft is a marriage of convenience and that we are interested in lessening our dependence on Microsoft."

Atari closes Far East factory

In a move aimed at cutting manufacturing costs, Atari has been forced to sell its Taiwan-based manufacturing plant.

The company has signed deals with sub-contractors across the Far East. These companies will carry out the assembly work on Atari's personal computers. Certain, unspecified conditions have to be met before the \$50m (£15m) sale can go ahead.

Atari spokesman August J. Upton, said that it evaluates strategy of a "costly-to-costly basis" and that the European market was "sluggish". ■

IBM PRESSES AHEAD

IBM's press launch at the company's South Bank offices on Tuesday 11 June was its first major event since it announced the PS/2 range in 1987. The most eagerly awaited news was that of Disk Operating System (DOS) 5, the successor to the widely criticised 4.01.

Other new releases include a series of mid-range 386SX machines, a 386 notebook, a rewritable optical drive and 50MHz 486 processor upgrade for PS/2 Models 90 and 95. In all, IBM heralded 13 new machines. How will they affect the market and will they further IBM's plans to dominate sales of personal computers? Read on...

CD OR NOT CD?

An external PC-compatible drive resembling a CD-ROM unit was one of the more innovative launches announced by IBM.

The Rewritable Optical Drive writes data to 3.5-inch magneto-optical disks rather than conventional CDs. The magnets have 127MB of storage space - the equivalent of 48,000 pages of text or 30,000 graphical images, compared to the standard 680MB on a CD-ROM.

While CD-ROM is a read-only system, IBM's new drive and disk combination enables users to read or write information in the same way as a normal external floppy drive.

Although the system lacks the data storage capacity of CD-ROM, it makes up for it in terms of speed. Access time is claimed to be a slightly 66 milliseconds - about four times faster than a CD-ROM drive. The Rewritable Optical Drive is available next month at £1,395.

Bugged or brilliant? DOS

Microsoft's disk operating system [MS-DOS 5.0] is the long-awaited upgrade to the heavily criticised version 4.01.

"This is the most significant event for IBM since the launch of the PS/2 range in 1987," said IBM Europe's general manager, William McCracken, at the press launch last week.

DOS 5 has a handier graphi-

cal interface (GUI), or 'shell', and like Apple's System 7, it also uses online help. There is also a half-way house between multi and single-tasking computing called 'Task Swapper'. This acts in a similar way to Presentation Manager, effectively suspending one active application so that another can be run or resumed.

The major enhancement is that it takes up less memory than its predecessor. The main criticism levelled at DOS 4.01 was that it took up so much memory that many larger programs, such as Probert, had problems running under the system. Many users complained it was also plagued by bugs and used a memory buffer system which had a tendency to trash hard disks. Such faults have made many users very wary of the new update.

DOS developer Microsoft promises that the improved memory management of the new system has eliminated all these problems. Chairman of



• DOS 5 picks up where the delayed 4.01 left off. The front end, which was seen as one of the more positive aspects of the older system has been retained, and according to both IBM and Microsoft it's also been improved. See for yourself.

Microsoft, Bill Gates, is very confident: "We believe this is the largest launch of a PC software product in history."

Already, many leading PC manufacturers, including Apricot and Viglen, and software developers such as Lotus and WordPerfect have committed themselves to DOS 5.0.

It is total over 130 manufacturers worldwide have licensed MS-DOS 5, which costs £69 for an upgrade and £99 for new users.



• William McCracken, general manager of IBM Europe, releases the release of MS-DOS 5.0 is one of the most important events in the company's history.

Super fast 486 upgrade

IBM announced at the press launch that it will be offering users of its 486-based PS/2 machines the chance to get 50MHz performance from their machines with a new upgrade card.

The card is compatible with the PS/2 Model 90 XP 486 and PS/2 Model 95 XP 486 systems. It features an Intel 504MHz microprocessor and includes an internal memory cache controller, an 8K memory cache and an integrated floating point processor.

The company also revealed that four new mid-range 386SX computers are to join its popular PS/2 range. It claims they offer faster processing, more storage capacity, expansion flexibility and portability than any existing machines in the range.

The Model 40 SX and the Model 57 SX are IBM's low



• IBM hopes the Model 35 SX will bolster its share of the mid-range portable PC market.

cost, high performance systems, priced at £1,521 and £2,473 respectively. They are intended for standalone use and aimed at small and medium businesses. The Model 40 is available now, the Model 50 will be on the market in August.

The Model 35 SX, out now, costs £1,650 for a 40MB version with 2Mb of random access memory (RAM). It has a small keyboard and is primarily for use with such applications as database management and spreadsheets. A 35 LS network server terminal is also available for £1,695.

Late entry into notebook market

Possibly the most important machine to be announced by IBM was the N336X notebook which fills a significant gap in the company's range.

This is a late entry in the market, companies like Compaq, Toshiba, Sharp and Viglen have already launched similar notebooks. With an A4 footprint and weighing 2.5kg, the N33 has a recommended retail price of £1,895.

Standard features include a 33MHz 80386SX processor, 2Mb of RAM upgradeable to 6Mb, a 40MB hard disk, and a 3.5-inch 1.44Mb floppy drive. A Liquid Crystal Display (LCD) screen which supports VGA graphics is also part of the deal.

The battery can last up to an hour and a half and takes four hours to recharge. A quick charge unit can be bought separately for £177.

The N33 SX Notebook should be available by the end of August.



• Remaining true to its history of following rather than leading personal computing, IBM has finally released a 386SX notebook into a market already overflowing with choice.

AN EXPRESS EXCLUSIVE

Win with your Amiga

New Computer Express, in conjunction with the Amiga Centre Scotland, is offering you the chance to enter 1991's Amiga Animation Festival.

According to the centre, it is looking for "The funniest, the most colourful, the weirdest, and most wonderful entries to this year's competition. Top quality prizes are up for grabs, not to mention a step on the path to fame and fortune".

The competition coincides with the internationally renowned Edinburgh Festival. Winning entries will be exhibited at the Amiga Centre between 21 and 28 August as part of a wider, non-computer related animation festival.

If you have an Amiga, then you can enter. Simply create a sequence of moving frames, and send it in on either floppy disk or PAL-compatible video tape. All entries have to be accompanied by an official entry form - such as this one you see below - and must be received at the Amiga Centre Scotland, 4 Han Street Lane, Edinburgh, EH1 3BN, Scotland, by 31 July.

Last year's winner, Eugene Mesquita walked off with an Amiga 3000 after sweeping the board with his effort, entitled, *Male Video*. This featured as imaginative camera work over miniature articles such as a Coca Cola can, alarm clock, and framed photograph. This Amiga created camera swooped over a desk which itself sat in a darkened room. Lighting effects were achieved by a pilot boat which used a standard lamp swinging from a bad connection. Eugene used an A500 running Turbo Silver software, and recorded in five second sections on to standard VHS video tape.

So, if you think that you can do better, you should fill in the card and send it off.



• The winner of last year's Amiga Animation Competition, Eugene Mesquita, walked off with an Amiga 3000. This is one frame from his *Male Video* computer produced film. Do you think you could do better? Will you try your floppy where your mouth is. Send in your entry now.

TOMORROW'S CUTTING EDGE

More far-out facts from a future that's getting increasingly closer...

Stock Invaders

Consoles are growing up. The giant Japanese manufacturers, Sega, for example, is not content to let its 16-bit Mega Drive (or Genesis as it is known in Japan and the States) just sit on desks and play games. It has extended the machine to access live financial news from the Tokyo stock exchange.

Using a network adapter - basically a specially customised modem - yuppie gamers can download up to 20 pages of Nikkei Dow-Jones's latest stock information at a time.

This radical move takes Sega's 16-bit, 68000 chip-based system out of the game console

category with a new, almost Presto-like approach.

Tokyo-based Sega has signed an agreement with the Daiwa Securities finance house which enables the console maker to begin supplying the on-line service in Japan from this week. No UK details have as yet been announced. For the future, both companies are considering adding sports information to the system, notably baseball scores and racing results.

The Mega Drive supplied with the network adapter comes at £40,000 yen out East. At the current Yen-Sterling exchange rate this works out to around £170. Sega's archival, Nintendo,



has several peripherals already available. These include a disk drive, a disk-fax, and although it has not been announced as yet, a keyboard is thought to be in development by the company.

The successful 8-bit Nintendo

• The Sega Mega Drive now you can play more than just games on it. Steve's million of Yen at stake on the Tokyo exchange.

Entertainment System (NES) is fitted with a 48-pin expansion port which would make a modem connection feasible. With the disk drive fitted, this would make downloading data from such networks a working possibility, in

• If a Canadian company's plans for the extension of satellite-linked computing is a success, the networking for the person in the street need not be a case of *frayed wires and headsets*.

Networks in Orbit

Fast, cheap and extremely clever, that's the news from Canada this week. Satellite networking of computers moves on apace with the opening of a link between Canada's United Communications and the US.

The ramifications for real-time interaction of computers across the globe via satellite are huge. One of the most important would be a reduction in the cost of transmitting data. This could eventually mean your own home micro could network with another on a different continent without recourse to long distance, squawking telephone lines, allowing shared use of data, voice and fax facilities.

But for the time being this promise is limited to those on corporate scale budgets. The United deal hooks its own private virtual network up to MCI Communications' Vnet service and establishes Canada's third such link with a US carrier.

European virtual network lines, developed in conjunction with satellite carrier Hughes Canada, are also in the air, but are not yet operational. ■

For more news on Sega's plans for the future of its machines, turn to pages 4 and 5.

The need for speed



• How fast do we really need to go? Some say that 500Mhz is speedy enough, others are looking at supercomputers in silicon.

Chips keep on getting faster and faster, and this week brings news of blistering speeds from the land of the rising sun.

Matsushita Electric has developed a 64-bit microprocessor that will be a key factor in its development of a parallel processing system capable of steaming up to 20 gigaflops - more than 4,000 times faster than an office PC. Compare that to the story we had carried on this page last week about Intel's record-breaking 320million 8.6 Dflop processor and things start to get seriously scary.

The new chip, called the Omega, is

based on RISC (Reduced Instruction Set Computing) technology, runs at 40MHz and can perform 80 million floating point operations per second (flops). It has a surface area of just 14.7 x 15.3mm. Such a turn of speed at such a size is possible thanks to 0.8micron CMOS (complementary metal oxide semiconductor) technology in the chip architecture.

The company claims it can link multiple Omega processors and connect them to its Adnet parallel processing system for 20-Gflop performance. In the meantime, watch this space. But don't blink or you'll miss it, it

Dicing with data - the optical revolution

A reversible optical disk with a data storage capacity triple that of current media is being developed by Japanese electronics giant Hitachi.

The device allows a whopping 1.5 gigabytes (Gb) of data to be stored on a five-inch disk. The fact that the disk can be written to and erased indefinitely is a major advance in data storage technology.

GREEN BEAM

Currently optical disks are written to using an infrared semiconductor laser. However, Hitachi's new device emits a green beam only half the wavelength of infra-red so more

detailed lines can be drawn on to the disk.

Of course, the technology requires a special kind of disk and a new two-layer system is under development. The disk is made from sapphire, vanadium and oxygen, then a layer of tellurium, iron and cobalt is applied and finally a platinum and cobalt compound is added providing the second layer.

This elemental sandwich is a far cry from the simple CD of today and Hitachi admits it is going to take some time to develop properly before such data-heavy disks hit the market.

And if Hitachi's 1.5Gb disk isn't

quite enough, hot off the press comes news of a 14Gb ETOM disk.

American company Optics has announced an improvement in its Electron Trapping Optical Memory (ETOM) technology, enabling the firm to make a giga gazette that can be read at a rate of 120 megabytes each second.

GENERAL ELECTRONICS

ETOM uses the movement of electrons between memory states to store data, unlike conventional disks which use tiny bumps in a foil substrate. Also, by writing to and reading with infra-red, the disk is never heated

and so can carry even more data.

But wait, there's more - the technology is capable of storing amplitude symbols for 0, 1, 2 and 3 instead of the usual on or off states. The 'quaternary' coding means a further four-fold increase of storage capacity in the same space.

CAPACITY CROWDED

And just when you thought it was stuffed to the gills, by shortening the infra-red wavelength a further two-fold capacity can be achieved.

All this may sound a trifle expensive, but Optics predicts a less complex and consequently cheaper read/write head can be used. ■



• Optical illusion or fact? New read/reversible optical disks can hold up to three times more data than conventional media.

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Following The Huge Success Of Our F-19 Digistar Offer, We At Digicom Are Proud To Present The Meanest Pack Available For The Amiga A500. This Unbeatable Deal Now Includes Commodore's Screengems Pack PLUS the A501 RAM/Clock Upgrade Plus Our Very Own Exclusive New Arcade Smash Hits Pack And The Chart Topping 1 Megabyte Version Of Kick Off 2!

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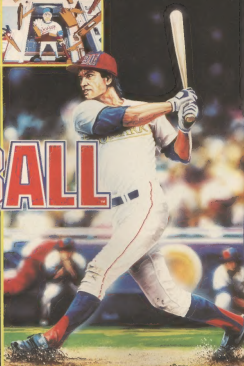
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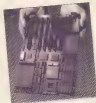
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Amiga & Atari ST Screenshots

Motherboard and baby

PRODUCT: Tiny 486 motherboard
NAME: Genoa's Baby AT
Format 486
COMPATIBILITY: PC



** Smaller than the average board, Genoa's Baby AT motherboards could save the way for small footprint 486 computers.*

For systems builders who need power but also a bit of space, Genoa Systems has launched what it claims are the world's smallest 486 motherboards.

The two boards have been designed in what the company calls 'Baby AT' format. Each is only 8.6 inches by 13 inches which is considerably smaller than normal 486 boards.

Available in 25MHz and 33MHz versions the new Baby AT boards feature six 16-bit, AT-type slots and two 8-bit PC-type slots. Each can hold up to 64Mb of on-board RAM which automatically reduces when you upgrade so there is no need for manual switching.

One of the most obvious advantages is in the construction of almost footprint 486 computers.

Price: MBA42125, 486-25MHz, 64K Cache £1,059
MBA42133, 486-33MHz, 64K Cache £1,159
MBA48125, 486-25MHz, 256K Cache £1,159
MBA48133, 486-33MHz, 256K Cache £1,279

Availability: Now
Target Users: System builders working with very tight space constraints
Contact: Genoa Systems, 0932 33737
Perceived competition: None

Notable notebook

PRODUCT: 386 notebook computer
NAME: Akhtar LCN 386-20
COMPATIBILITY: PC

Although Akhtar is among the top ten information technology manufacturers in the UK, its name is hardly on everybody's lips. This is because it

WHAT'S NEW

More essential no frills news of all the latest hardware and software

mostly sells into the education and military markets. However, the company aims to change all this with the launch of its competitively-priced 386 notebook computer, the LCN 386-20.

With an A4 footprint and weighing only 7lbs, the LCN comes with a 33Mb hard disk, a 1.44Mb floppy drive, Windows 3.0, a serial mouse and a carry bag. It has a high definition LCD screen which supports VGA graphics with a resolution of 640x480 pixels.

The company is confident that the LCN is the product that will allow it to break into the mass market. Marketing director Alan Tibbott reckons, 'The LCN is the best price-performance notebook product currently on the market. It packs all the features you would expect from a desktop 386 personal computer into a machine that fits into a suitcase.'

So perhaps Akhtar will be a household, or at least office-hold, name by this time next year.

Price: £1699
Availability: Now
Target Users: Small to medium businesses
Contact: Akhtar, 0297 443521
Perceived competition: Cheap notebook PCs imported from the Far East, Samsung, Hyundai

Jazzy colour at a low cost

PRODUCT: Super VGA colour monitor
NAME: SV1481/2
COMPATIBILITY: PC



** The psychedelic splendour of the SV1481/2 Super VGA colour monitor is within financial reach of even small businesses.*

The price difference between monochrome and colour monitors is narrowing all the time, so that many small businesses can now seriously consider buying jazzy monitors such as the Super VGA colour SV1481/2 from Southern Peripherals.

At just £240, it can support all VGA configurations modes up to 1024x768 pixels with 256 colours, with a 14 inch

screen, which appears almost flat. Weighing 12.5kg it comes with a tilt and swivel stand.

While, as the company admits, it would never win any prizes for amazing resolution images, it does provide, 'Basic, good, last-three-years quality.'

Price: £240
Availability: Now
Target Users: According to the company, anyone who wants a 'left cheap' colour monitor.
Contact: Southern Peripherals, 0255 810021

Perceived competition: Low cost Taiwanese imports, ADI, Samsung.

Tidy disk

PRODUCT: Disk holder
NAME: Fellowes Multimedia Storage Tray
COMPATIBILITY: Across the board

If you are the sort of person with mountains of various sized disks toppling from your desk the Fellowes Multimedia storage tray could be what you need.

It is a cheap disk holder with a difference; it can be simply adapted to hold 5.25-inch disks, 3.5-inch disks, CD-ROM disks and mini disks cartridges or any combination of the four you need. Constructed of unbreakably strong polycarbonate, the trays come supplied with four specially designed dividers so that you can organise your disks as you want.

The trays have also been designed so that they can be stacked on top of each other, to further save desk space.

As the company points out, at 05.95 the trays are competitive as a 3.5-inch disk holder alone, but it also offers much more adaptability.

Price: £5.95
Availability: Now
Target Users: Everyone with disk



** You can use all your disks of various shapes and sizes neatly arranged inside the Fellowes Multimedia Storage Tray.*

space problems
Contact: Fellowes Manufacturing (UK), 0302 885331
Perceived competition: All the cheap plastic disk holders from Taiwan

Reports can be made simple

PRODUCT: Relational report writer
NAME: FlexGL
COMPATIBILITY: PC



** Deflexco reduces their relational report writer to the only system around to offer such a wide range of functions to create strong reports and presentation documents.*

Do you need to compile a report in double quick time? All the info looked away in various computers and mainframes? Then FlexGL could be the answer.

It is a simple to use relational report writer which can collate information from various sources and programs into a professional-looking document that requires no programming skills. Everything is achieved using action bars, pull down menus and mouse controls.

It can produce everything from simple listings to containing complex reports containing calculated columns, multiple subtitles and text. Information can be imported from DataFlex, Lotus, dBase, Paradox, Clipper, Foxbase, dF, dBase and ASCII files.

The resulting masterpieces can be exported on to WordStar, WordPerfect and Microsoft Word.

Price: Starting at £295 for a single user version
Availability: Now
Target Users: Business users who need access to various sources and mainframes
DataFlex: 071-729 4460

Perceived competition: The company reckons that there's no other system around that offers the same range of features as FlexGL.

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EXPRESS MAIL

Welcome to Britain's fastest letters page! This week we ask:

- Is Express becoming New Computer Express? (Answer: *no!*)
- Where on earth is the Archimedes? (Answer: *Search me!*)
- Are business games the real software prizes? (Answer: *maybe*)
- Why are there no TV computer shows? (Answer: *good question!*)
- What happened to the weekend editions? (Answer: *Servant!*)

NACE one?

I think it's about time you people came clean and renamed your magazine New Amiga Computer Express. Does the CSM company pay your mag for drooling over the Amiga every week? I think it is about time you started time the Amiga story week so that as a bit and other computer owners can get a look in in the pages of Express. I only now buy your magazine because there's no other weekly. Come back Pop all is forgiven.

I suppose that if you print this letter at all your reply will be the usual type of sarcastic comment on this subject that we out here in customer land have come to expect

Septimus Basilian Essex

YEP YOU guessed it - next letter...

I wish to protest at the number of articles on the Apple Macintosh. Don't you realise there are only 2 Macs in the whole of Britain?

SERIOUSLY THOUGHT Septimus, if it's possible to be serious with a name like that, if you examined NCE carefully you'd notice there are more news and reviews of PC products than any other machine including the Amiga. The reason's simple - there's more happening on that format.

We try and cover everything for all machines but at present, the Amiga is doing a stone - hence the coverage. Also, out of the 18 writers and contributors working on NCE, only 5 own Amigas, so it's not because we're fanatics or CSM lackeys okay? Stay tuned

Pure bias

Can you enlighten us as to what new Amiga developments we are going to see in the coming weeks of New Commodore Express?

I await your answer with bated breath.

Kevin McCaughy Liverpool

WELL, KEVIN there's a whole bunch of Amiga developments coming your way over the next few months. They'll be on the front cover, in the news pages and in Jason's column. But you'll need to keep an eye out because they'll be between masses of stories on other machines. Sorry, but do a head count will you? - it's your bias that's showing.

Wireheads

I expect I am one of many Amiga owners who will write to you regarding the article entitled 'The Halcyon Days of Amiga Games' (you're the only one actually - H F 90). This is one of the biggest loads of trash I have read in my entire life. Stuart Campbell seems to think that the Amiga will become a wirehead's machine in only five years of existence. He says the Amiga and its siblings will follow the same path as the 8-bits. The 16-bit box live or six years to win over the 8-bits. This means the one year old console will outlive the 16-bits in 1991!

Simon Richards Tottenham

BUT THE Amiga's already been around five years. I thought Stuart's piece was slightly actually. Claiming the Amiga won't one day become a wirehead's machine is like burying your head in the sand. Okay, so maybe it won't be until 1996 - but it stands to reason it'll be out of date sooner than that. Come to think of it, the Amiga's already out of date anyway. I knew this because I'm at the moment typing this reply on the office NeXT. And before you write in saying the Amiga's better than a NeXT read Amiga-owner Keith Portner's review on page 48.

RIP Arc

As one of the minority Archimedes owners I was deeply distressed not to find an Archimedes column in issue 120 of NCE. Surely the column hasn't been dropped? When you consider that half of Express is printed on paper not even up to the standard of the paper used in council toilets, surely NCE can afford an Arc column? An explanation to this worried minority would be appreciated. One other thing, just how big does a certain computer's software base have to be before it is considered not so small anymore? Any response welcome.

S F Mansfield/Margate Kent

SORRY but the powers that be have decided it's curtains for the Archimedes column. But that's not to say coverage of the Arc is over - check out one of our lead news stories this week. But as for the regular column - well, like the machine, it never really took off did it? So just how big does a software base have to be? Well...er... bigger than the Arc's that's what.

Pure cynic

Your magazine sucks. First you give us a Arc column then, when we're hooked, you drop it. You're all just totally cynical.

H R Hardy Chichester

IT NEVER ceases to amuse me how deeply serious some people get about their magazines - so much so I was thinking of passing this over to our resident Dr. Clairs. But let me personally reassure you - we're just dropping the column - the news material it offered will be picked up in just as much detail, if not more, in our news pages.

TV PC show

I write to tell you of my disgust of the television industry at present. Why don't they realise that it's time for a regular slot for a computer program? In the early eighties there were a number of short lived shows that concentrated on the 8-bits but there has been nothing since. It's not as though there's a lack of interest in the subject, in any

newspapers you'll find over forty regular magazines dedicated to nothing else.

It is estimated that there are enough machines in this country for every household to have one installed. It would be nice to see a program devoted to games and hardware equally and to give advice to all formats, presented by someone who knows what they're talking about (i.e. not Tim Smith) What do other readers think?

Simon Richards Tottenham

WELL, I KNOW what I think Simon and this time I'm in full agreement with you. So if there's anybody from the BBC reading please do the following right now. Walk up to Michael Chackland's office on the top floor, and push the following memo under his door -

To: Boss Michael,
I for one am completely appalled by the crude embossment which typified the pathetic attempts made by the BBC to broadcast programmes purporting to be of interest to computer users. The two specified writers, namely Martin Low and Patrick Atwood, were pathetic blegs. I've already got you an invitation, new and stop paying attention to the report of cultural pursuit ever involved in the history of television and television viewing. Please now or put on a decent computer programme.
Yours sincerely,
I sign a colleague's name here

There, that got that out of my system and for those two letters in one oh Simon, I'm sending you a fiver towards the postage.

Yuppie crime

I am a computing degree student, and I work part time in a computer shop on Tottenham Court Road.

I agree that software piracy, admittedly carried out mainly by adolescent male computer users, is damaging to the industry as a whole, but I feel that the real damage is done not by these people, but by the new generation of yuppie-philes. I am alarmed by the number of

£5
OUT OF HATERS' REVENUE

ON THE COUCH



This week's handy psycho-analytical tip goes out to Mark Sangster of Rastrom Homs. All he had to get his deepest desires in print was to write in with the name of his machine, his favourite software, and the machine he'd most like to own.

Our resident psychiatrist, Dr Clive Anthony, then placed him on his leather couch here in Express's magazine-walled New York office overlooking Central Park and probed the inner machinations of his psyche. All your unconscious has to do for a free diagnosis is: **Letterbox Code**, New Computer Express, 30 Massachusetts St, Bath BA1 2BW.

So take it away Mark! and we hope you enjoy the flight

● **MACHINE OWNED:**

Amiga

● **FAVOURITE SOFTWARE:**

Texts

● **DESIRED MACHINE:**

IBM 3270 mainframe

Well, I was wondering when I'd receive a letter like this. Mark, it's clear the problems in your relationship with your father. How can I be so sure? Well, let's first position the Amiga within the current neuro-psychological framework, shall we? As we all know, the machine is a significant object of desire. And as with all such objects, your ego is constantly attempting to repress the unconscious wish to bond with that object on an extremely intimate level. Yes, Mark, I'm afraid we're talking sublimated digital lust here. And what's more your unconscious knows your father has found you out! It's so easy to detect! Firstly, you are using your addiction to Texts as a substitute for penitence and meaningful intercourse with your Amiga. Secondly, it's clear that the IBM mainframe represents your unconscious need for a stern father figure to punish you for your habitual joystick wiggling. **DIAGNOSIS:** Throw away Texts immediately and buy a C++ compiler. You will shortly become adept at mainframe programming, become a systems analyst, earn millions and your father will finally forgive you.

"respectable" business people that come into the business department where I work, telling me about the copies they have. Yesterday, a customer came in, and was looking at DTP programs for the ST and PC. When I asked him if he needed any help, he replied that he was just looking around. He then asked me if I could order him a manual for CALAMUS on the ST and CORE, DRAW and 382 2.42 on the PC. I looked a little puzzled and asked him why. "I've got pirate copies of them!" he said proudly, slipping his spectacles back into his top pocket. I told him that I couldn't help him, and I'd went back to his chauffeur-driven Jaguar. I believe people like him, and Bill is not an exception, do more damage to the industry than teenagers copying games, for those such as CALAMUS and 382 will spend thousands on research and development for these programs, and then can only hope to sell a few thousand copies and therefore rely on these sales to stay alive. From a moral point of view, the rich business man's theft is even more disgusting than the adolescent pirate's because he can actually afford to buy the program, and he is going to use the program he has stolen to make money for his business. Whereas copiers of entertainment software can (dubiously) argue that if they didn't have a pirated copy, they wouldn't have the program at all, business users cannot do this, because in many cases, the programs they use are essential to their business and they could not operate without them.

Markus D East Edmonton London

UNFORTUNATELY I THINK it's getting to the point where people don't expect to pay for software full stop. Maybe the reason there's so much "professional" copying is because so much PC and Mac software is particular is not copyrighted. Human nature being what it is, the software just gets copied willy nilly.

☎ **Copy cats**

Pirates may not rip-off CDs here, but apparently it's big business on the continent. As well as tape and disk copying, cartridge copying is the latest game. One importer a couple of months back reckoned 25 cartridges were pirates most coming from Hong Kong where they cost £3-54, compared to £19-59 for the original.

I agree with your views on piracy and because possession of pirated software is an offence, theoretically you can be arrested for an archive containing some cracked game, eg Digi, Robotron etc. Why can't Sparco, IPL, Dark Shadow, Phoenix etc do something worthwhile like write a better game than hacking everyone else?

Giles Malsbary via Aspects

YEP IT SEEMS that cartridge copying has been doing the rounds for a while now. Express first heard of Sega devices here two years ago but in Japan you can buy them quite legally, and to prove it here's an ad of a current Japanese magazine *Compu-game Monthly*. I still reckon CD-only releases are the

SEGA 専用DOCTOR開器器



„You may not understand a word of it but this is an ad for a *Magpie* cartridge copier on sale in a leading Japanese magazine

medium term answer though because the duplication costs would be so massive an outlay it would immediately get rid of all the bedroom cowboys. Though no doubt in the long term someone would find a way.

☎ **Ad nouseum**

Here's a list of my top ten bates applicable to your ADS section. At

number one by a long chalk, and they all know who I mean:

- 1 buyers who say they will but won't (yes I'll have it, the cheque on it's way, Ho Ha)
- 2 prices including VAT
- 3 reissued due to time wasters
- 4 add more money for post and packing
- 5 add even more money if you want it this month
- 6 only zap each order over 1000 only
- 7 portable M&T for sale
- 8 include games pack worth several hundred pounds
- 9 apiece down ads
- 10 Out row

Alan H Foster Southampton

YES IT'S PROBABLY about time we restated those top ten bates so to everyone out there, here's an advert for one of the best possible deals in town - 'I AM OFFERING £5 FOR THE BEST

TOP TEN LISTS I RECEIVE EACH WEEK - THEY CAN BE ON ANY SUBJECT YOU WISH AS LONG AS IT HAS SOMETHING TO DO WITH COMPUTERS AND IS NOT JUST A LIST OF YOUR FAVOURITE NAMES"
Write to the usual address and mark the envelope "Publish this list or I'll kill you"

☎ **New format**

I thought I'd try getting in touch with you this way for a change. I'd like to start by saying that your new formatting of the letters page is the most beautifully chequy way of using fewer letters to fill the same space. We readers will not be content! Just think what else you could use all those half inch gaps for
David Tange via Aspects

OOH EHR! Lately on a moment. We introduced the new format for two reasons. Firstly, so you can use the 'creative white space' as an area to write copious notes for when you send in your replies. Or, alternatively, so you can cut them all out, stick them together and save yourself the cost of letter paper. How's that for green consciousness?

☎ **Pervert**

Give me two naked dolphins. I can take it.

John Speers Cardiff

I'M SORRY but I can't. The mere thought of those gorgeous, unbridled sub-aquatic females drives me wild. I also think I should protect the more impressionable readers out there. Anyhow, the Editor prefers Killer Whales.

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AMIGA

- SAS/Lattice C Compiler upgrade from HiSoft
- Confused by C? What you need is an interpreter
- KCS unveils a powerful upgrade to its PC emulator

LATTICE UPGRADED

HiSoft has a couple of very nice products lined up for release later this year. The company already has what must be the most complete range of Amiga programming utilities on the market, but that range is to be extended still further with the release of both new and improved products.

For C programmers, HiSoft has not one, but two new products to offer. The

first is the latest release (version 5.10) of the industry standard SAS/Lattice C compiler that is used by just about every Amiga C programmer worth their salt.

Although Lattice itself is no more, the SAS institute has taken on the responsibility of producing upgrades and supporting existing users.

Here's what it has to offer:

- IMPROVED WORKBENCH USAGE - if the CU reduces you to a cold sweat,

then you'll love Lattice's new Workbench interface.

You can now compile and link your code from a single friendly mouseboard frontend. As a result,

there's no more complicated command line parameters to enter, just set everything up from a requester, select COMPILER

and you're done.

- PERFORMANCE IMPROVEMENTS - No

garbled figures were available, but HiSoft's assurances are that Lattice C version 5.10 is a jolly quick

Then again, it could hardly be slower than previous releases could it?

- DEFAULT OPTIONS - Why type in the same command line parameters over and over again when you could simply tell the compiler once how you want it to work? Well now you can. Version 5.10 allows you to set up a compiler configuration file that contains all the command line arguments you need.

- C++ SUPPORT - For the assurance among you, the compiler now supports C++ style line comments. These can be mixed with normal C "/*" comments.

Personally I wouldn't call this particularly impressive, but I'll assured it is.

Contact HiSoft on 0525 718261.

E FOR BEGINNERS

People used to languages like AmigaBASIC often find it frustrating that you have to compile your code each time you wish to run it when working with

languages like C and Modula 2. The answer is an interpreter, but these tend to be restricted almost entirely to BASIC.

However, all that is to change with HiSoft's new C interpreter.

HiSoft claims that its new C interpreter system takes the tedious out of the C development process; just click or a menu item and your C program runs immediately. No compiling. No linking. No fuss.

As HiSoft staff says, there's no need for the usual computer development cycle of edit, compile, link, run, crash (that's the one I'm most used to), load, edit, compile, etc.

Not only is HiSoft's C interpreter

great for beginners, but seasoned C programmers will also find the ultra fast development environment a great relief. Obviously it won't produce standard-size programs like a conventional compiler; instead it provides a quick and easy way of producing working code.

If you do need to produce standard-size applications, then all you need to do is to run your source code through a real compiler and it should compile and run without problems (not including logic errors, of course).

FLICKER FREE AND CHEAP

You probably already know that Microflyer has dropped the price of its Flicker four card from £335 to just

£125. The company claims the drop comes as a result of increased sales, but I'm not convinced.

Perhaps it has something to do with the fact that both Commodore and CDC have reached their cheaper units?

Microflyer has been enjoying its monopoly for far too long, so I only

wonder to demonstrate how good a bit of competition is for us users.

So, whether it's the economics of demand or something else that dictated the previous price, I don't know. But

what surprised me is how easily Microflyer dropped over 60 per cent of

the price. If they had reduced the price to say £250 or even £200, I could

understand - but £125? It makes you wonder, doesn't it?

In any case, the Flicker four card has suddenly become a very attractive proposition to those of us that enjoy

* Fans of Kenigase & Kikola's masterpiece of systems programming will be pleased to learn that HiSoft has launched an upgrade to the SAS/Lattice Compiler.

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tinkering with such things as DTP packages, CAD/Computer Aided Design, solid modeling and general graphics etc.

If you too have been tempted, then give MicroWay a call on 085 541 5466.

KCS UPGRADED (AGAIN)

Bitron Devices has released yet another software upgrade for its impressive little A500 PC emulator card, the KCS Power PC Board.

Version 2.75 of the emulator software supports the following changes over version 2.0:

- SERIAL PORT - The Serial port now supports 19,200 Baud. This has been successfully tested with the PC program Telet 3.15 with Windows downloaded.
- SCREEN UPDATE - This was fast enough as it was (especially when you compare it to S&S's snail paced ATecol), but KCS has speeded it up still further. The new software now updates the screen 10 times faster than the original version of the software.

● FLICKER-TOO - It is an attempt to reduce eye strain in interface mode, the card now has an 'anti-flicker' switch built in that attempts to reduce flicker through software. I'm not sure how this actually works, but KCS claims it reduces flicker substantially.

● DISK SUPPORT - You can now directly read all those copy protected PC disks. This allows you to run substantially more software than was previously the case. Just think, you can now run AutoFlow under the KCS card!

● HARD DISK SUPPORT - KCS has extended the number of hard drives it can support to include the CEM A590, the Galent H8300, the GIP Impact Series II and the SupraDisk 500P.

● BITS AND BYTES - There's a handy little RAM disk program that gives an extra 196K above the usual 704K in MSDOS (it's a total of 900K for the flicker saving, you KCS have also written its own MOUSE.COM driver which is a lot better than the old one.

Jason Halborn

ARE YOU AN ICD NOVIA FASHION VICTIM?

Isn't it strange how everyone has been doing the praise of ICD's new Novia 2X (is it just ICD's?) internal hard disk in for the Amiga 500? OK, there's no doubt that it's an impressive piece of kit, but I have a couple of things to say.

First, what's the point in having an internal hard disk in the first place? It's great for the 2000, but for A500 owners

really need one! Sure, it keeps everything nice and tidy, but what price speed?

With Amiga hard drives being sold for around £250 these days, it seems excessive to fork out £500 for something you can't even see once it's plugged in!

Personally, if I ever put up with a bit of extra spaghetti hanging off the back of my machine

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ST

- Are we being fobbed off with below par games?
- ST poised to dominate the International Music Fair
- Thalamus blasts into the ST market with Armalyte

ARMALYTE, STREET LIGHT, NIGHT SIGHT

Nice, not 10, entering the ST arena, but Thalamus. This software house has been producing quality games on certain lesser computers for years and it has now decided to tackle the ST market.

The first release will be Armalyte - The First Run, an action/strategy. If the game, you are the lead of the Aulans, the final defence against the marauding efforts of the Armalyte aliens. Your

mission is to destroy the Aulans government in four satellite planets and the home planet of the nation.

Expect some frenetic gameplay and a blast of power-ups; Thalamus doesn't produce wintry shooting games.

The release date is pencilled in for the end of this month, price: £25.99.

THE STATE OF THE GAME

There can be little doubt that there are a lot of second rate games on the market for the ST. You only have to thumb through the pages of ST Format to see a couple of stinky games which have been pushed out of the software houses doors on a wing and a prayer.

Yet despite the low scores they receive in the magazine, these same games end up hogging the top of the charts for months. Why is this?

More often than not, games are sold on the back of a license, a firm, a book or an event. The software houses know that this 'name' will go a long way to pushing you, the punter, to pull the trigger.

Continued on next page >



Amiga! Take a look at the missiles on that Armalyte's got more punch than Glee. Well, no, it's not your best joystick.

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Voyetra Sequencer Plus is arguably the industry standard sequencer for IBM machines. It is in use in many commercial recording studios worldwide. Version 4 supports almost all MIDI interfaces (including the IBM PS/1 MIDI card) and sound cards (including Ad Lib, Soundblaster & Roland LAPC-1 cards).

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box off the shelf and examine the screen shots on the back.

Yet often, these licenses are second-rate formula productions with little in the way of gameplay and less in terms of lasting interest. This may seem perverse but worse is to come.

When the software houses do get it right and knock up a first rate game, it usually hovers around the top five in the chart, and then disappears to a life of obscurity in the bargain bucket end of the chart.

The only reason I can see for this sorry situation is that you, the consumer, aren't prepared to spend more than two minutes reading the instructions. So long as it's just a single sheet of folded paper with a paragraph of help repeated in 22 different languages, you're happy. The fact that you just have to go out and buy another dress game next week doesn't stop you handing over £25.

So, if you find yourself bemoaning the state of games or the ST, you only

have yourself to blame. If you keep on buying these second rate production line games, the software houses will keep on producing them.

The next time you're just about to start your dash in the shop keepers hands, count to 30 and think: what kind of reviews has this game received, what do my friends have to say about it and, most of all, is it a license?

MUSIQUE INTERNATIONALE

The ST dominates the MIDI music market as surely as the Sun dominates the oven-stands. If you went to the MIDI Music Fair at Maccoti, in May, then you'd have seen the first hand.

However, if you missed out, then there's another show around the corner which deserves your attention.

The International Music Show takes place at Olympia from July 10-14. However, the first two days are trade only, so unless you have a friend in the music industry, don't turn up until Friday. The show combines electronic

music making and more traditional methods. What's more, loads of celebs turn up to have a look around, so you might find yourself bumping into Dale Midgley at the concessions stand.

All the leading manufacturers of music-related hardware and software for the ST will be there, most sporting ratty posters. The show is also traditionally an event at which a wealth of new products are launched.

What's more, various names will be participating in demonstrations and performances. Admission is £6 per person, £3.50 for the under 14s.

For more information call the organisers on 0533 599711.

16-BIT SHOW

It mustn't be your cup of tea, then check out the Fourth International 16-bit Computer Show taking place over the same weekend. Over 100 companies are expected to be taking stands at the show, including a large number of ST specialists. The show takes place at Hurlingham Racecourse.

For more information call the organisers on 061 547 1183.

HI-TECH, LOW-COST, PD

So, how many PDs have you been playing Jeff Minter's shareware game *Clamratt* to death? Hands of you, I hope. Well I have some good news. Nope, not another Yaky game, but certainly two worthy of your attention.

Spectral Sorcery is a better of a game. The idea is to move a wizard around a grid of pads, converting them



• Spectral Sorcery is one of those PD games that make you wonder why you bother with the full price ones.

to your colour. You take it in turns against another player or the computer.

You can either stomp (bunk the squares you're on) fill your colour, ask for help, or cast a spell which turns a number of pads to your colour. It's well programmed and bimble's addictive.

It's available from TRUST PD disk number GMR711 at 18, The Park, Southampton, Hants, H93 9QY. Telephone 0422 341666.

Dark Wares is a dungeon master game and its shareware. The idea is to liberate yourself from a labyrinthine dungeon, overcoming loads of monster and puzzles.

You can use magic or brute force against these adversaries, but more often than not, the problem is simply finding your way around the dungeon.

Andy Hultshinsen

Andy Hutchinson is the news editor on the UK's leading ST magazine, ST Herald. The latest issue is on the newsstands now.

GETTING BACK TO THE BASICS OF COMPILING

GFA Data Media produces one of the best BASIC language compilers available for the ST. The package has just been updated to version 7.6 and includes some nifty new functions.

The language has been designed to run with the entire Atari ST/STE/TT range. If you're lucky enough to own a TT, then you can use the extended graphic modes of this

powerful workstation, as well as the additional I/O ports.

The language remains as structured as ever, combining the best elements of C and Pascal with the easily learnt syntax of BASIC. GFA-Basic includes some superb graphics handling commands and is a great way of side stepping assembly programming.

FREE C Compiler and Programs Disk!
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by Paul Overaa - The complete beginners guide.

If you want to learn C from scratch but have never been able to afford to purchase a C compiler then this amazing offer is for you! For just £19.95 we'll send you Mastering Amiga C plus - totally free of charge - the Chantavase C Compiler NorthC and the Mastering Amiga C Programs Disk!

Containing 201 large-format pages Mastering Amiga C is applicable to all major releases of C and is specific to learning C on the Amiga. It assumes no prior knowledge of C and contains many easy to follow tutorials. Mastering Amiga C will be available in the first half of May - no cheques or credit cards will be cashed or debited until the book is dispatched. Order today to avoid delay!

Mastering AmigaDOS - Volumes 1 & 2

The acclaimed two volume set that covers versions 1.2, 1.3, 1.3.1 and 2 of AmigaDOS is authored by IS Consultant Editor and industry guru Mark Smalley along with Bruce Smith.

Vol. 1: A complete introductory tutorial on AmigaDOS, 398 pages for just £19.95 including a free Initiation Disk when ordered direct. Amiga Shopper said: "...one of the most comprehensive and lucid books available on AmigaDOS" - CIB Ramshaw and Jeff Walker.

Vol. 2: A complete reference guide to all commands, 220 pages for just £19.95. AmigaBASIC said: "You won't find a better guide to, or a more useful book on the Amiga than this - unless it turns out to be Volume 3!" John Walker.

Ordering: Send cheques/PDs made payable to 'Bruce Smith Books' to: Bruce Smith Books, FREEPOST 242, PO Box 368, St. Albans, Herts, AL2 3BB. Please pay Access/VISA number & expiry date to (0727)-41243 (24 hrs). All books dispatched same day when possible. Postage free in UK. Add £5 for overseas airmail orders.

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All STE Ram Kits come with instructions and DO NOT require soldering to most machines.

ST Software Packs

Due to high demand sales, we have now run very low on stocks of the ST software packs below. Therefore please ring for availability before ordering. For contents of the ST software packs - see the listing of ST computer ranges on the opposite page or phone us for details.

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The Philips 8833 is in the perfect colour monitor for ST and Amiga owners. With its vibrant sound and super quality picture it really shows off the capabilities of the ST and the Amiga. The Philips 8833 will also come with 12 months on site warranty FREE!

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ATARI STE POWER. consists of Standard Pack and 20 top selling arcade games (for individual game titles see the black box on the bottom left of this page)

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	512k	1mb	2mb	4mb
ATARI STE STANDARD PACK	£269.00	£299.00	£329.00	£409.00
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AMIGA A500 1MB ASTRA Amiga A500 computer, 512K Ram expansion with clock and battery back-up, mouse, tv modulator, manuals, Workbench etc disks, plus the ASTRA 10 games pack including the following games: Database, Dungeon Quest, II Motion, Grand Monster Slam, Kid Groves Powerplay, RWT Honda, Shuttle Puck, Calc, Soccer, and Tower of Babel

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AMIGA A1500 BASE A1500 computer with 2 x 3.5" 800k disk drives built in, and a mouse. The A1500 base pack is supplied with no software.

1mb	3mb	5mb	9mb
£599.00	£795.00	£875.00	£1000.00

AMIGA A1500 SOFTWARE consists of A1500 base pack and Platinum Works, D Paint 3, Populous, Stone City, Battle Chess, Their Finest Hour and 2 books.

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AMIGA A1500 SOFTWARE 52MB consists of A1500 software pack and fitted 52mb auto booting hard disk drive.

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AMIGA A1500 BASE 104MB consists of A1500 base pack and fitted 104mb auto booting hard disk drive.

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AMIGA A1500 SOFTWARE 104MB consists of A1500 software pack and fitted 104mb auto booting hard disk drive.

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 - Compatible with Adib and Sound Blaster
 - Bundled software including a boot-to-soft converter, a CD Music Player to control CD-ROM audio, VoiceEditor, FM Intelligent Organ, MIDI Synthesizer Plus A and MM Play presentation program
- Plus! Quite a spec and quite a package. This could also be the card that finally makes it into Sierra's delayed multimedia CD-ROM package (it includes a CD-ROM, line games, sound cards, etc. retailing at around \$600-700).

● Contact: Source-Wave on 0610 408 378 3838

ULTIMATE GAMING

A future blockbuster from Origin of the company's rock record is anything it go by at Ultima 7, which should be out and about this Christmas.

The Ultima series is highly regarded by many as being one of the best, if not the best, character role playing games on the market.

It's fully appreciate Ultima7, however, you are going to need 2Mb of RAM and 15Mb of space on your hard disk! Some kind a brainy

● Call Mediagame on 044 631 761

Paul Rigby

SPECTRUM

- 128K lives! – Two new games that won't fit into 48K
- Play it again SAM: musical releases for the Coupé
- Infinite lives and other powers for Multiface owners

128K SIZED FUTURE

Although the Speccy's come with a putative 128K byte of memory as standard for years now, there have been precious few games that have taken advantage of it.

And it may have made use fit all that extra power (storing code like the normal), as it was only been for relatively superficial things like higher sounding music or so multi-loading.

As desirable as these things are it's generally agreed that a lot more could be done with the extra memory or offer and the few 128K only releases to date like *Where Time Stood Still* and *Center Command* have certainly shown this to be the case and gained ship loads of praise into the bargain.

ETHNIPOD HOT TIP

There's no need to type in that long listing. Turned a few issues ago, instead simply type **ETHNIPOD** into the high score table for infinite lives.

Well the good news for everyone with a bigger Speccy is the imminent arrival of two 128K specific games that look like adding every single bit of the machine's sleeping extra muscle.

Firstly there's *Tek*, Ocean's new arcade conversion with a jungle based, platform theme which apparently was a bit of a squeeze to fit into 128K let alone over 48K.

It looks very good indeed with well drawn characters, low levels of jungle and some very noisy and ill level studies. Thankfully those not people at Ocean aren't going to charge any more than they usually do for this memory intensive number and the asking price is the UK adjusted standard £11.23.

The other 128K sized slice of action taking on the horizon is *Radical from Shark* who were responsible for *SMN*. This is the first cutsey, Bubble Bobble-type game we've seen but for sh, at least a week, and needs the full 128K in order to accommodate one of the fluffy characters, ranging from baby seals to rabbits.

Radical won't be out for a few

months yet but will doubtless be worth the wait. I hope this is the start of a 128K renaissance. The 128K, Plus 2 and especially Plus 3 have surely been held to the best of their abilities and it will be interesting to see how far the above two games can stretch the Speccy's store. Watch this space.

MULTI-EXTRAVAGANZA!

Here's a special treat for owners of Romtek's Robot's excellent 48.8Kcse widget – a lovely long list of prizes.

For the uninitiated, unaware and just plain thick, a Multiface is a truly wonderful device that you plug into the back of your Speccy and use to stop programs dead in their tracks with the prod of its magic red button.

The Multiface lets the game or whatever to 'hold it right there' (technical explanation) and allows you to examine the code, PEK, POKE and generally mess around with it. That's as well as providing options to back up the program, which is invaluable for transferring games on to disk for Plus 3 owners, or print out a screen dump.

Multifaces vary in price from £29.95 to £79.95, depending on which Speccy you own and are a absolute no at the price.

More details are available from Romtek Robot at 34 Deanbrook Ave, London NW9 5EN.

And for the wise people out there who've already invested in one, here's a bag of Multiface goodies to simply insert into the appropriate games library of which have recently been reborn on the

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cover of Y5 is released at a budget price for the usual infinite effects.

- **Marscape**
56693.0 Invertible monsters
- **Human Killing Machine**
38046/v A number of lives
- **Adrianed 2.1 (288)**
37566.0 Enemy doesn't fight back
- **Mapland Diary**
29622.0 Infinite bats
- **Marc**
35135.0 Lives
- **New Zealand Story**
50000.0 Immunity
- **Guernica Map (128K)**
40872.0 Lives

- 48010.0 No enemy fire
 - **Viduo Pisher**
45647.0 Cash
 - **Enigma**
34783.0 - Flo, press F
 - 48813.0 - System jump
 - 47244.0 - 50320.0 - 50334.0 -
 - 50340.0 Gravity drive
- For the above two select music position
cursor at destination and press 0.
- **FT Tornado**
60838.0 Invertible

Your nearest is due to Jon Rose for the first three, Alan Johns for supplying the next five and Mark Harris for the others. Thanks to each of you.

Robin Aisley

PLAY IT AGAIN SAM COUPÉ



Of all the computers in the world...

Our friend and brother the SAM Coupé seems to be making its mark making potential at long last. With an impressive and decidedly slick six channel stereo soundchip and MIDI port as standard it makes the Speccy, and most other machines come to that, look like the Jaws of the computer world.

The good news for SAM users is the release of three new musical products. To start with, there's a Sound Sampler package from Blue Alpha priced at

£49.95. For this you get an interface, microphone, documentation and control software.

Next there's Music Master, due for release on SAMC's Revolution label. This is an apparently useful, fun and educational software package that drives the Sam's internal sound chip using the standard keyboard.

Finally, and possibly most impressively, is a MIDI Sequencer from Tim Humphries. SAMC's claims this will be a "very powerful, professional quality package". It retails for £39.95 including MIDI cable.

It will be a good and glorious day when we see SAM on the Top of the Pops.

C64

- The Last Ninja returns in style, but is this the end?
- PD demos that show what the C64 can really do
- Whatever happened to the CD games revolution?

TOO GOOD TO BE TRUE

The Last Ninja II was released on cartridge a couple of months ago, and as an afterthought System 3 has decided to release it on cassette and disk too. Obviously, the most loading facility is not present, but the two originals never suffered because of this.

The premise of the game goes something as follows. After having been chased by a time warp to modern day New York is the previous game Ninja game, our hero Aramaki finds himself warped once again, this time to Tibet.

The game is set inside a Buddhist temple in turn divided into five chambers - Earth, Wind, Fire, Water, and Void. Aramaki must defeat his mortal enemy, Kunkle, less the Ninja be vanquished forever.

Each Chamber consists of a number of comic scenes. The Ninja can explore these screens as desired, unless in adversary challenges him - if the Ninja runs away from a battle it is considered dishonourable, and Bushido power will be deducted. Bushido power

is vital for success and the completion of the game.

The status area includes a prayer wheel which opens up to show the location of nearby objects, including weaponry such as swords, nunchucks, shurikens and staffs. There is also an assortment of objects which are used to solve the various puzzles on each level.

The control window and lighting moves are fairly straightforward, and if you've played any other Ninja games it will be a doddle.

At the end of each level you encounter a Shogun, who must be defeated while you are holding a magic scroll - so you see, if certain objects aren't collected at the right time it will leave you at a certain clock without a saving checkpoint.

Having said that, puzzles are logical and well structured - it's only combat that becomes more difficult.

You may have guessed already that I simply adore this game. Gameplay is boosted by the need to gain Bushido

Continued on next page >

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power, so it isn't always best to run away from a mad warrior bearing a basket crown off.

The levels boast variety, imagination, indeed the whole game has been superbly designed and implemented - it could only happen on the O64.

Graphics are astounding, especially the real substance, this is Robert Leary at his finest. Sound too is great, with voice superb (and to enjoy, and there is a superb intro to properly describe the amazing intro sequence.

Before you reach for the piggy bank, there is a catch: the version reviewed was the two disk set, and loading was a bit annoying, so cassette users might be better off buying the cartridge.

Oh, it is a damn good game and a perfect end to a perfect trilogy. Or is it?

PERFECT PD

More disks have popped on to the desktop this week, courtesy of Binary Zone PD. On, and by the time you read this it will have shored premises, so from

now on contact Binary Zone at the new address: 34 Portland Road, Drishveth, Works, W9R 9QW.

After the technically excellent Bristol 31 was expected big things from the Light group... and its new demo My Oh My delivers the goods. After the usual intro screen comes a ubiquitous FU logo and some springy spheres, accompanied by a great Jean-Michel Jarre track. After this is a dazzling array of wily/wobbly spheres. How do they do it?

The next bit made me leap with excitement - FU colour cycling, boasting literally hundreds of colours. Next comes a big standard score message screen (come on, it wouldn't be a demo without one), and then a plethora of DMCX scrolls, guaranteed to induce serious headaches. After another scrolling interlude comes a staggering 3D vector graphics card, where shapes translate and fly around the screen.

Who says the O64 is dead? A highly recommended demo, but sadly available on disk only.

The next demo is absolutely colossal, boasting an incredible 14 separate parts (believe it or not, a half disk sized). Coming under the name of Ice Cream Castle it features a guy approaching an ice-cream vendor. You then select one of 14 different toppings. Whichever you select leads in as a demo - very novel (especially as the guy is a brilliantly animated character).

I won't go into copious detail, out here are my favourite parts:

- Part one has an unbelievable FU crest logo, which wobbles and floods, and would not look out of place on an Amiga.
- Part three has no less than 120 sprites popping up the screen, into the borders, and beyond.

- Part four is a mini-slideshow, featuring some of the best screens from Defender of the Crown.

- Part eight is totally amazing, mainly because of the vertical scroll bars. It has to be seen to be believed.

- Part 10 again strikes and FU crest logo, this time mirrored and rotated about with eye-popping results.
- Part 13 boasts some real casters, and features a great image of the best of the Masters of Noise.

Indeed, all of the demo parts have some great sound effects along with the action. The demo scene seems to be buzzing with activity at the moment, and there are some really amazing productions out there.

Most demos only come on disk, unfortunately, but Binary Zone PD is planning a series of cassette-packed with-top-class demos. So without further ado, send an SAE for more details.

And if anyone else knows of other PD libraries, drop me a line at New Computer Express, 30 Monmouth Street, Bala, Aberystwyth, Ceredigion, SA1 2SW. Who knows, maybe PD reviews might just spring into existence.

Andrew Roberts

THE CD REVOLUTION THAT NEVER HAPPENED

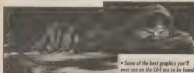
A couple of years ago Commodore introduced its CD games selection for all those 5.25-inch format, 1.44MB capacity and purchased the total package, and it was an absolute steal. 30 games on compact disk, plus testing software and connecting cable, for only £10.99.

It started the industry talking, probably because the prospects were enormous. CD singles ranging the Spectrum, Amstrad, and C64 versions of a

game could have been produced - imagine the potential. Loading was rapid and accurate and masses of games could be stored on just one disc.

However, everything seemed to fade into the past. Why did the software industry let this innovation disappear? Would CD games have made a difference? Was it a good way to combat piracy?

Would someone in the know like to drop me a line?



Some of the best graphics you'll ever see on the C64 are to be found in the amazing Last Ninja 3.



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COMPUTER CONSUMABLE SPECIALIST

HART MICRO

CPC

- SPM Software's General Military Simulator
- Gazzia II: the tape/disk version of console smash
- The secret file extensions in Bonzo's Super Meddler

GENERAL MILITARY SIM

For those of you fed up with zapping aliens from Zog, or taking out hordes of New York bawls with well-aimed Ninja sticks, SPM Software could well have the perfect alternative.

General Military Simulator is a kind of construction kit for conflicts. Although it comes with a variety of pre-programmed scenarios, the beauty of it is that you can also invent your own.

The game is based on SPM's established wargaming system, whereby two different map scales fill you view

both the campaign area as a whole and also zoom in to control your troop movements. The graphics are not earth-shattering, but they are functional. Remember, this is a thinking man's game, not an arcade boid.

Artillery, infantry, airborne units, etc. are represented by icons. Turns alternate between you and your opponent, and on your turn you send orders to all your various battle units. This can take a long time, since it involves lots of menus and choices.

The orders you can deliver fall into four categories:

- MOVE: You specify a direction and the unit moves as far as it can, depending on type, terrain and fatigue.
- ATTACK: This causes your unit to attack an adjacent enemy force. Taking the initiative is often useful.
- DO IT: Your units will prepare for attack, selecting the most advantageous positions offered by the terrain.
- BUILD: This is how you

develop all those air bases, bridges, etc. what for a successful push.

The results of all the battles are worked out using "Effective Strength" calculations which take into account a unit's strength, fatigue, morale, etc.

Playing any of the battles in General Military Simulator takes time, and so does developing your own. However, this isn't the sort of game you'd blast away at while you're waiting for the kettle to boil anyway.

For dedicated wargamers, and anyone who enjoys a bit of thought-provoking strategy, GMS will provide many, many hours of entertainment.

GAZZIA II ON TAPE

Gazzia II is a terrific game on the Amstrad cartridge. I mean, there wasn't what you'd call a lot of gameplay - no fights, no bonuses, no level-up stuff - but what there was was simply sodas of fast, frantic, border fun. Quite simply, I don't think I've ever played a more enjoyable hectic set.

Anyway, the longest-lived tape/disk version is now limited, and I've been glued to the monitor screen for the best part of a day playing it.

The bad news is that the graphics are not as good as those on the console version. The pitch and the players are rather dull. However, the fast scrolling and ultra-fast play are still there - the game is every bit as exciting, playable and addictive as the console version.

Disabling the ball couldn't be easier. Once you've "trapped" the ball, you simply run across the pitch and the ball



● Gazzia II on tape looks a tiny bit drab compared to the cartridge version, but it's just as fast and playable.

stays at your feet. Your opponents won't stand for this, though, and a well-aimed tackle will see you lose possession.

So you have to start attacking enemy players by passing the ball to your other teammates. Unusually for a football game, passing can be quite a controlled manoeuvre. The joystick controls the direction of your pass, and then all you have to do is decide the strength of the kick by varying the length of time you hold the fire button down. It's really simple in principle, but so effective in practice.

While the bulk of the screen is given over to the playing area, below it is a scanner showing the position of all the players on the pitch. It's a nice touch, but unless you can use both eyes independently, it's not sure it's too useful. Taking your eyes off the pitch action for an instant can be disastrous, such is the pace of the game.

Gazzia II is brilliant, but it's flawed. Continued on next page >



● General Military Simulator's graphics are crude but functional. You can design your own maps, too.

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too. You can only kick in verticals, horizontals and diagonals, and the gamekeepers are practically useless. Some of the three-in-one discs are decidedly dodgy, too. What do you expect when there's no RLE?

However, as a two-player game, *Demz* is still almost unbeatable for single, fast fun.

SUPER MEDDLER TIPS

David Cardus of Tallington has found out some fascinating information about Borez's Super Meddler. The disk contains a file called *PRAMMOD.ASM* running at 16000 Hz or no fewer than 47 750s Resident System Extensions). Type *!HARU* and you get a list. However, many require you to input parameters.

Here are some of the ones David has managed to work out:

- **!M.FILL/Address/length/byte** - Fills an area of memory with a byte starting at the address given.
- **!MMIO/C/Address/length/byte** - Copies an area of memory from starting address to the new address.
- **!DEPRO/Accesses** - Loads a protected BASIC file into memory.
- **!BIG/HexC** - Prints double-height text.
- **!BORDER** - Using the up and down keys you can change the border colour, confirming your choice with the *COPY* key.
- **!BPS/Ink number** - The same as *BORDER* except for the ink.
- **!BOX/X,Y** - Draw a box from the origin to coordinates (X,Y).
- **!LINE/ID,X,Y** - Draws a line from

coordinates (X,M) to (Y,L).

● **!INPUT/output type/AS** - For 'input type' you put either 0 or 1 for numeric and alphanumeric information respectively. This prints the string *AS* in a box allowing you to edit it. When you press *RETURN* the string is saved as altered.

● **!PAUSE/X** - Pauses the computer for *X* multiples of 0.5 seconds.

● **!P.DUMP** - Dumps the contents of the screen to the printer.

● **!P.ON & P.OFF** - Echo from screen to printer is turned on and off respectively.

● **!S.L/H & !S.R/H** - Screen is scrolled left or right respectively and wrapped onto the other. *X* is the number of test divisions.

● **!S.L/H, !S.R/H, !S.D/H & !S.U/H** - Scrolls the screen *X* units to the left, right, down and up respectively.

● **!SLEEP** - The computer stops until *X* is pressed.

● **!MMU/character/number of spaces/memory of locations** - This is used where you have concerned a lot of colours involved. You move the specified character up and down with the cursor keys. When the character is next to the option you want press *COPY*. The specified number is then stored at the selected memory location.

● **!COLOR and !GREEN** - These set up two different palettes for the VGA.

Rob Lawton

Rob Lawton is the editor of *Amstrad Action*, the magazine packed with CPC news, reviews and features every month.

MACINTOSH

- Are we being ripped off when it comes to upgrades?
- A M Micro launches maths co-processor for the LC
- New monitor that allows you to hide your Mac

SOFTWARE RIP-OFF

Why does it seem that certain software companies are ripping us off? The answer is because they are. It's not one company as an example, but there are several others who are just as bad.

The company in question produces a popular antivirus detection program. Of course, every time a new virus is discovered, the program needs to be updated, so the company kindly offers a scheme whereby, for about £70 per year, subscribers receive updates to the program as they become available.

A friend did just that - he subscribed to the scheme at the beginning of the year, and sat back and waited for his upgrades to arrive. So far he's received one.

OK, not many new viruses have appeared in the last few months, so the program hasn't needed updating. He feels that he made a bit of a mistake by subscribing, but was confident in the knowledge that, should a new virus appear, he'd receive a new version of the program almost immediately.

Then, a couple of weeks ago, a malware appeared through his door,

advising him that Version 3 of the program is now available - at a cost of just £70 to all registered users of version 2.x.

Further surprise that he should receive this mailing, as he'd long since the company's decision, pointed out that he already subscribed to the upgrade service, and asked when he could expect to receive his copy of version 3. "Oh, so," said the software house. "Your upgrade subscription is only for version 2 of the program. Version 3 is a beta program."

"But isn't it just an upgrade to your antivirus program?" asked my friend.

"Well, yes," they replied, "but it's such a major upgrade that it isn't covered by your subscription."

Even better, my friend then asked whether, if he were to pay the £70 and upgrade to version 3 of the program, his upgrade subscription would then 'carry over' to this new version.

"Oh no," they replied, "your subscription is only valid for version 2."

This leaves my friend - and, I suspect, thousands of others - in the

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rather unenviable position of having to pay £70 for the upgrade to the program and then yet another £70 for a year's subscription for version 3 upgrades.

Of course, he could just stick with the version he's got - but is the company going to continue supporting an outdated version for too long?

Who knows - but I think that my friend has decided that from now on he'll use the free, and excellent, Disinfectant program rather than a commercial offering. Disinfectant works just as well, and upgrades almost three times the days of a new virus being discovered.

The point is that software companies - especially those concerned

with antivirus programs - have users over a barrel with regards to upgrades. You either pay through the nose, or make do with an old, buggy, version.

No one wants paying for an upgrade if it's a major improvement on the program, but what really puts us as users to say for minor updates and bug fixes. Software companies should realise that sooner or later people are going to get fed up with this kind of profiteering and will shop elsewhere.

There are, of course, many exceptions. Alphas, for instance, offers upgrades to its Timestep program at very little or no charge to registered users. It is, however, the minority.

HARD SUMS ON THE LC

AM Micro distribution has announced a Maths coprocessor for the Macintosh LC. The LC doesn't come with one as standard, so it is incompatible with some programs (such as Microsoft Excel 2.2 and better versions of Studio 86). The lack of a coprocessor also means that any maths-intensive programs run far more slowly.

Apple LC should care at these for just £239. According to its distributors, it will run applications which are specifically written to take advantage of a maths coprocessor between two and ten times faster than the basic Mac LC. **AM Micro is on 0252 426473.**

NEWS FROM APPLE

Apple's PR company seems to have gone mad - new press releases seems to be arriving every day.

First off is Apple's new 21 inch colour monitor, for the Mac IIx, IIcx and IIfx. It offers three times the viewing area of a standard 13 inch monitor and around 27 dot centimetre viewing area than most 19 inch monitors.

In an interesting move, Apple has built ADB ports into the front of the monitor so that users can plug the keyboard and mouse straight into it and take the actual Mac out of the way on the floor.

The new monitor will start shipping at the beginning of July this year, suggested retail price is £3,295.

The other major news this week is that Lotus is to ship a version of 1-2-3, the standard PC spreadsheet, for the Macintosh this autumn.

It's interesting - and brave - idea. Although 1-2-3 has been the most popular spreadsheet on PCs for years, Macintosh users have been generally stannish about its Microsoft's Excel, and with Lotus having just launched its own, market, the question is whether there is enough room for yet another competitor.

Lotus' big disadvantage is that Mac users do not know the company name - they're familiar with names like Lotus and Microsoft - so look out for a massive publicity and public awareness campaign as throughout the Macintosh press. 'Real Soon Now', in anticipation of the launch.

Ian Whigley

POSTCARD FROM AMERICA

Many programs, especially word processors, are bundled with utility disk accessories. Most of them are obliged to only work with a specific software package. If you want a discman, or ordinarily to work with all your programs, you need to buy it separately. Unfortunately, almost all of these product specific versions break under System 7.

The software that kept track of disk accessories, DA Handler, has been built into the package with the new operating system. When the DA is run, it boots up with a message telling it will only work with its handler program - now if that program is running. As you might expect, the message also contains an ad for the expanded, universally usable version. What to do?

The answer comes from the good days of the Macintosh, before Software and Font/DA Juggler. The System file was limited to only 10 DA's, and people didn't want to waste valuable slots, or care to always view disk accessories that they could only use with one program. The Font/DA Mover program had a hidden feature to allow


users to insert fonts and disk accessories directly into applications.

Launch Font/DA Mover - version 4.1, the last before the introduction of System 7, works fine. If you're using an older version, boot under System 6.0s to perform the operation. Hold down the OPTION key when clicking on the OPEN button. Instead of a font/DA exclusive list, magically everything becomes available to be opened. Copy the problem DA into its companion application, and everything will now work fine under System 7.

Some power users are complaining that their favourite Command key capabilities have vanished. The most missed is Command-e, which would eject and unmount a floppy disk. It's the same as dragging it to the Trash.

Don't fret, it's only undergone a name change. Command-y performs the action. The interface guys felt that 'Pulkey' went better with the y-key.

David Morganroff

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WHOLE WIRED WORLD

Around the world in seven seconds. This week our man on the move, Steve Gold, tells us of hacker arrests in the US, an on-line system in the air, Philips' HDTV system's early debut and all the latest international news.



NOTEBOOK WITH MOUSEPAD DEBUTS AT PC EXPO

Aquiline, a Bennington, Vermont-based PC clone specialist, will announce a 4.5 pound notebook PC with a built-in mousepad at PC Expo in New York at the end of June.

The \$3,995 machine comes with 1Mb of RAM (expandable to 4Mb internally) plus a 20Mb hard disk. Despite this, the machine is just 1.33 inches thick and is driven by a 20MHz 60286SX microprocessor. Other features include serial, parallel and mouse ports, as well as an external VGA output socket.

The crowning glory to the high-speed, low-price notebook is a 10-inch super-fast, active VGA LCD screen, and the wealth of ROM-based software that comes built-in - FastLink (a file transfer package), Fastlog (a security package), battery alert, and a phonebook module. Also bundled with the machine is DOS 4.1 and a copy of Microsoft Works or a copy of Windows 3.0. Not bad value.

Contact: Aquiline, 449 Main Street, Bennington, Vermont, VT 05201, United States. Tel: 0101-802-442-1526 Fax: 0101-802-442-886.

GETTING ON-LINE IN THE AIR

Modem access to an on-line system in the air? No problem if you're flying aboard a plane equipped with French Telecom's Arcam airborne system. The communications giant is offering airlines the chance to install its pay-as-you-go satellite phone system that allows calls to be made from all over the world.

The system, the first of its kind in the world, was developed by French Telecom with the help of OTC of Australia and Teleglobe Canada, and is known as Arcam. Unlike competing air-

Seven people in four US cities have been arrested for allegedly manufacturing and exporting counterfeit Nintendo video games. Nintendo America has announced that the suspects are linked with several major Taiwanese companies.

Originally, the arrests were made by the US customs service in Chicago, San Jose, California, Los Angeles and Miami. According to Nintendo America, the people arrested were Patrick Yu and George Yeh of United Microelectronics Corporation; Uo Fu Wang and Jimmy Yao of NT-Cent; King Huan and Alice Chong of King Hwa Industries Corporation; and Joseph Bernheim of Galaxia Overseas.

Nintendo officials said that the arrests relate to criminal charges against Queen Chu of Aerospace of Taiwan and Tina Huang of Rainco Mountain International, also of Taiwan.

phone systems, which use analogue ground relay links, the Arcam system transmits directly to one of several dozen satellites circling the earth. Because all the band width available, full digital calls are possible, so modems and fax transmissions can be used with the ease.

Pricing on the Arcam system is a dollar a minute which, although not cheap, does allow you to make call from anywhere in the world, except if you're flying over the north or south poles.

US COMPUTER HACKER GETS A YEAR AND A DAY INSIDE

A top US computer hacker has been sentenced to 366 days in prison for stealing information from American Telephone & Telegraph (AT&T) and its subsidiary Bell Laboratories.

Leonard Rose Junior, 32, an unemployed computer consultant, has pleaded guilty to a single count of sending AT&T source codes via modem to a fellow hacker in Illinois, and a similar wire fraud charge involving a Chicago hacker. Rose was once a member of US hackers' group called the Legion of

Doom. He was originally indicted on charges of computer fraud and interstate transportation of stolen property, but those charges were dropped under a plea bargain with the US government.

In court, US district judge Frederick Motz ordered Rose to sell his computer equipment, which was seized last year in a raid on his house in Middletown, and to tell potential employers of his conviction. He will begin serving his sentence on July 10 this year. The judge in the case did not order Rose to pay compensation to AT&T because he has what one of his lawyers called "a negative net worth."

US 'SUPERMAN' COMPUTER FORGER INDICTED

Remember the 'Superman' film bit where the crook steals a little bit off everyone's pay packet and siphons off the resultant cash into his own pay packet? Well, it seems that fiction has turned into such as, over in Rochester, Virginia in the US, a grand jury has just indicted a clerk on charges of computer forgery in a similar case to the Superman film.

Diane Murphy, a 51-year-old payroll

According to on-line sources, the arrests will almost certainly mean the end - for the time being at least - of cheap imports of counterfeit Nintendo games cartridges into the US. This will have a knock-on effect on the import of these cartridges into the UK from the US. Buy now while stocks last!



* Nintendo games - the end of large imports of counterfeit cartridges from the US to the UK is imminent.

clerk from (ironically) the Department of Correction has been charged with altering computer data and obtaining \$1,500 by deception as a result.

Murphy's arrest is the latest result of a special audit of Virginia's computerised payroll system. At least eight state employees have been fired since the audit, which found clerks taking advantage of a new computer program. Corrections Director Edward Murray said that Murphy's arrest stemmed from a special investigation that led to the firing of three other department payroll clerks in early May. According to Murray, audits of payroll records showed that the clerks had given themselves pay to which they were clearly not entitled.

US DATA BILL WITHDRAWN

A US Senate bill restricting some forms of electronic data transmission has been withdrawn from consideration. The action came after US government officials met with representatives of the Electronic Freedom Foundation (EFF).

The EFF was founded by Mitchell Kapor and John Barlow, two US computer industry gurus, in order to support litigation in the public interest to protect "First Amendment" (freedom of speech and actions) rights in computing. The proposed legislation would have prohibited individuals from using encryption programs on data sent via links.

The US on-line world is not out of trouble yet. According to EFFector On-line, an EFF electronic publication, the proposed legislation will be replaced by a new Omnibus Crime Bill which will impose slightly less draconian rules on US email services and their subscribers. ■

PHILIPS TO LAUNCH HDTV SYSTEM A YEAR EARLY

Philips' electronic television technology division has announced that it will launch its first HDTV system in 1994. It is also set to launch the technology for colour reproduction in the product. While awaiting news from manufacturers of digital video technology, the Philips Corporation, Berlin, is preparing a prototype in the Philips

Consumer Electronics International division.

Conservation of space and time is a major aim of the Philips HDTV system. It is designed to be compatible with the European Broadcasting Union (EBU) system of compression, and to be compatible with the US system of compression. The Philips HDTV system is also designed to be compatible with the US system of compression, and to be compatible with the US system of compression.

Philips HDTV system. The system is designed to be compatible with the US system of compression, and to be compatible with the US system of compression. The Philips HDTV system is also designed to be compatible with the US system of compression, and to be compatible with the US system of compression.

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- C088 Disk B to above
- C093 Bacteria demo
- C101 Sonix classic
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- C113 Sonix No. 17
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- C131 Disk B to above (18)
- C142 Digital concert 1
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- C327 Turtle power disk A
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- C425 Arni sampled off radio
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- C430 Smith & Jones 3 (18)

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Single disks	£1.50 each
Two disk sets	£2.75 per 2 disk set
Three disk sets	£4.00 per 3 disk set
Four disk sets	£5.25 per 4 disk set

Min order 5 disks

More disks are in the collection, too many disks to list here. Last count over 920.

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- E017 Printer utilities 1
- E020 Fonts disk 1
- E021 Fonts disk 2
- E022 Label designer
- E028 Ultimate utilities
- E029 Virus Killers disk 1
- E032 Boot block makers disk 1
- E034 Printer utilities 2
- E045 Business card maker
- E046 Viruscope (good)
- E051 Ncom V1.9 (modems util)
- E056 Tetracopy
- E057 Catalogue Workshop
- E063 C Manual
- E070 QL Emulator
- E071 Disk B to above
- E072 Disk C to above
- E074 Spreadsheet
- E083 Master virus killer
- E088 Textplus word processor
- E094 Flexi Wosname database
- E105 North C
- E114 Slideshow construction set
- E119 Dope intro maker
- E130 Rom database
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- E141 Forums really unlimited
- E153 Disk crunchers

Games

- D004 Monopoly USA version
- D008 Paranoid (Breakout game)
- D013 Peters Quest
- D020 Poker Solitaire
- D026 Blackjack/Solitaire
- D027 Star Trek disk A
- D028 Disk B to above
- D035 Break out games
- D044 Flashbier
- D052 The Drip
- D054 Breakout Construction Set
- D057 Letrix
- D065 Wet Beaver Tennis Game
- D069 Ties/Battleships/Chess/Tennis II
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- D071 Return to Earth
- D072 Star Trek the Next Generation
- D074 UGA Games Compilation
- D075 Snake Pit Game

Graphics Section

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- F102 Argonaut Anim 23
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- F113 Walker demo 1 2 Meg
- F114 Disk B to above
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- F126 Disk B to above
- F127 Disk C to above
- F141 Fillet the fish 1 Meg
- F164 Tobias richter-slideshow
- F165 Disk B to above
- F166 Lost in Space Anim 2 Meg
- F167 Disk B to above
- F168 Disk C to above
- F170 Batman the movie 1 Meg
- F173 Juggler meets the lady
- F174 Fantasy space-slideshow
- F176 Mandelbrot generator
- F179 Iraq demo 1 Meg
- F180 Amv the Squirrel at the Movies 2 Meg
- F190 Tron Anim 1 Meg
- F191 Disk B to above
- F200 Robin Hood slideshow with music (Cartoon)
- F209 Life of Brian slideshow with samples from film
- F219 Franklin the Fly anim
- F228 Italian Job disk Anim 1 1 Meg
- F229 Italian Job disk Anim 2 1 Meg
- F242 Stealthy Manoeuvres Swiss army F16 Anim

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TECH TIPS

Have you got a printer tip to share? Can't you get your PC to run Spectrum software? Is your Apricot getting you in a jam? Keith Pomfret can help you with all your technical hang-ups.

Emu-later

In Express 53 inference was made to the development of a Spectrum emulator for the Amstrad PC. Subsequent issues have made passing references to this and in issue 95 the news was that such an emulator was under review at the Express offices.

In issue 101 you reported that you, "saw it, tried it, it fell over. We tried it some more. It fell over some more. Now we're waiting for a version that works."

Well, I have been religiously watching your column since then, but no joy, alas it finally given up the ghost, or did I still live in hope?

Richard Roberts, Norwich



• With all that lovely PC software out there, who would want to run Spectrum programs on this powerful machine? Richard Roberts would, that's who.

We still live in hope. We were promised another emulator but the chap who writes them obviously lives on a slower processor than us and as yet hasn't felt able to offer the completed and unbugged version. However, rumours are rife about an improved version running on most PCs except Amstrads. Perhaps the technical wizards at Amstrad towers in Barnwood have cast a spell on it to keep the Spectrum flying.

Apricot jam

I have been given the opportunity of buying an Apricot F1 computer at an extremely tempting price. Unfortunately my knowledge of this machine is limited, and I wonder whether you could answer

a few queries for me?

I intend to use it mainly for producing a magazine, and so I will need a graphic text output program. A full GTP package would be perfect, but just something to do simple layout, such as columns, would be sufficient, allowing me to 'paste' the pages together. I already have a word processing package.

Also, will I be able to connect a standard Epson compatible parallel printer directly to the computer, or will it be necessary to obtain a special lead/interface? If so, where can I obtain them?

Simon Davies, Norfolk

The Apricot F1 was one of the early MS-DOS machines that shared its operating system with the PC and not much else.

When it was launched it was touted as an innovative computer. It had 256K of memory which at those days was huge. The keyboard worked by sending an infra red signal to the main unit and it had all the features needed to run most of the software available at the time.

The F1 went through various upgrades which took it from being a totally incompatible machine to being a slightly less incompatible machine. Later F1s can read PC data disks and some have enhanced displays that can handle

certain PC software.

It's perfectly possible to find an F1 with one floppy, two floppies, a floppy and a hard drive, colour or mono display, and various configurations of system (BIOS). I have never seen any GTP program that will run on an F1. I seriously doubt whether any graphics intensive program will run on an F1 which is a shame.

Things that I have used on an F1 are a drawing program, a word processor, the operating system CP/M86, terminal software for logging on to bulletin boards and a small database.

The parallel port on the F1 is standard and any printer for which there's a printer driver available for the F1 should work on it. The serial port is standard too and will support serial printers and modems.

Stand up STs

I have some basic queries which I would be grateful if you could resolve.

First, a plea for information. I recall reading in a magazine many months ago about 'Expansion kits' from Germany which would transform the standard single unit 'Aard ST' computer into a separate processor and keyboard unit as in the case of the 'Mega ST' and in

a similar manner to the A1680 kit for the 'Commodore Amiga'.

I have since seen no further reference to such kits for the ST, and ask if you could find out about availability, cost and ease of conversion (ie is an STE compatible with such a kit). Are there any British distributors who would be willing to import kits given sufficient demand?

I also believe that sets of replacement keys can be obtained for any ST (possibly also from Germany) and are designed to give better performance as well as cosmetics - any change to an ST's function keys would be gratefully received for instant! Do you know of any such kits?

Austin Blackburn, Wexley

There is a kit, it comes in three variations for the PMs and STEs, Megs, and Ms. It's called the Lighthouse Tower system and it costs £199.50 for the PMSTE version from Aard Workshop on 0753 632212. We're waiting for our review model to arrive and as soon as it does, we'll be doing a detailed build up in Circuit City. ■

Write to Keith Pomfret, Tech Tips, Express Computer Express, 30 Farnborough Road, Basingstoke, Hants RG24 0JF.

TIP! Hot codes! Get your JP101 working with an Electron

Many years ago, I bought an Olivetti JP101 Printer for my Acorn Electron, mainly in the hope of using it as a successful word processor. For its cheap price, I was quite impressed. However, I found that it did not run under standard Epson codes for underlining or any other text techniques.

As most printers not using Epson codes, I was stuck until I modified my existing programs with the codes given in my manual, which are listed below. Although the JP101 will now work with my Electron, I have had no success with my Amiga under its Printer Drivers with the JP101. Despite this, I have written to Tech-Tips in the hope of helping Andy Reeves (Express 134), and in giving the codes, I hope it will allow him to use the printer with his PD Driver Creator.

CONTROL CODES

ESC C: General Reset

ESC ~: Double Height Character ON (H11 - 37)

ESC %: Double Height Character OFF

ESC 3: Double Width Characters ON (H11 - 50)

ESC 4: Double Width Characters OFF

ESC -: Horiz. spacing 10 Chars per inch (H11 - 312)

ESC /: Horiz. spacing 12 Chars per inch (H11 - 313)

ESC +: Horiz. spacing 18 Chars per inch (H11 - 314)

ESC E: 18 Vert. Spacing (H11 - 45)

ESC F: 18 Vert. Spacing (H11 - 46)

ESC ^: Underlining (H11 - 210 - 37)

ESC ~: Cancel Underlining

R - D - J

Thanks for the codes which should help Andy Reeves get started. If you're having problems getting the printer to work with your Amiga, why not give our sister mag Amiga Shopper a ring on 0225 44204. It's jam-packed with technical advice for the serious Amiga user. Our old Ed Exp. Stuart Anderson, now occupies the big chair so phone him for a chat. The next issue's out the first week in July.



CIRCUIT CITY

You can give your Amiga A500 a brand new body without resorting to expensive plastic surgery. And what's more it's a dead-simple process. Keith Pomfret takes out his trusty tools to give his Amiga a full metal jacket.

BOX CLEVER

PRODUCT: A1500 expansion kit
MACHINE: Amiga
FROM: A1500 Ltd
CONTACT: 081-907 3636

The A1500 is an expansion kit that lets you take the internal parts off an Amiga A500 and replace Commodore's plastic case with a solid metal box with room for expansion. The keyboard gets a separate box and is connected to the main box by the predictable curly cable. The whole thing is only 19 inches wide and with a conversion kit can be rack mounted.

It comes in a robust cardboard canon with all the parts, screws, connectors and twiddly bits necessary to convert your A500. All you need to provide is a couple

of hours fill your time and the most basic tools. There is no soldering and the most complicated job is lining up a disk drive behind its slot. Anyone who can read and find the business end of a screwdriver can build an A1500.

GOOD DOCUMENTATION

Everything in the box is identified in the instruction manual which includes checklists and illustrations to guide you through the job. The build starts with the disassembly of your A500, and the instructions take you through a checklist that shows you the correct way to dismember your A500 and importantly, reminds you about the orientation and polarity of the various cables that need to be removed and replaced.

The orientation of the ribbon cables within the A500 is illustrated and there's a diagram of the motherboard showing where these connectors come from.

Once your A500 is lying in bits on the table, you'll have the parts that you need and the case which you don't. You may feel that your Amiga will never need Commodore's plastic box again but we felt that it should be kept. If at some time in the future the Amiga had to be sold, the ability to offer it as either a bare A500 or an upgraded A1500 could only be an advantage.

SHELL-SHOCKED

The robust metal box that the insides of the A500 are built into to turn it into a T500 is known as the shell. It is made from thick sheet steel and is cream in colour.

With the A500, the joystick and mouse ports are at the rear. To bring them to the front of the A1500, ribbon cables are attached to them on the motherboard and then fed back through the box to a pair of connectors at the front.

If you have a memory expansion in the trapdoor under your A500, the instructions include a warning about insulating the rear of the memory expansion board from the metal shell of the A1500. Those people who need occasional access to the trapdoor in order to disable the memory will use certain programs that don't tie the entire 512k will be disappointed.

The motherboard is laid in the base of the shell on top of its insulating template and secured using half a dozen screws.

A socket in the front of the base is connected to the keyboard bus on the motherboard III allow the remote keyboard to be connected to the case directly.

FITTING THE DRIVES

The disk drive of the A500 moves from the side to the front and a ribbon cable supplied to the kit is used as it is further away from the motherboard in the A1500, the drive fits on a purpose designed 'saddle' with adjustment up and down and fore and aft.

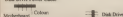
The initial fitting of the disk drive is simple enough with final adjustments coming later when the top half of the case is added. There's room inside the A1500 for a second floppy drive and a hard drive, too. The basic in-

Checklist

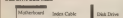
Keyboard Connector On Motherboard



Disk Drive Power Cable



Disk Drive Data Cable



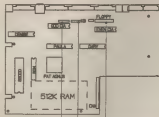
* The bayonet connector on a motherboard.

WHAT'S A 1500?

When Checkmate Digital started distributing a product called A1500 last year, there was no confusion. It was an upgrade kit for the Commodore Amiga A500 which allowed you to take all of the components from your A500 and place them in a new case with a separate keyboard and more room for expansion.

The best field plans were disrupted by Commodore with its Amiga 1500 which was a variant of the existing 2800 series which also had a separate keyboard and expansion potential.

To add to the confusion, the A1500 is now distributed by A1500 Limited and a range of extras compatible with it are distributed by Checkmate Digital.



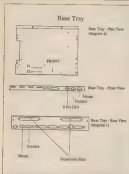
Motherboard

Disk Drive Data Connector

Disk Drive Power Connector

Keyboard Connector

* The disk drive data cable. This should be fitted to the drive along with the disk drive power cable.



• The Base Tray - Plan view (top), Front view (middle), Rear view (bottom).

doesn't come with the components to add these drives. They are available separately so you only buy the components that you require. If you are going to add more drives though, now is the time to do it.

The second disk drive kit replicates the saddle, cables and fastenings of the first drive and sits alongside it facing the front of the machine. If you aren't fitting a second drive, there's a blanking plate so you don't end up with any ugly holes in the front of the A1500.

Anyone who can read English and find the business end of a screwdriver can build an A1500

This idea is carried right through the kit with several ports and holes covered by blanking plates until an upgrade is fitted. Each additional add-on comes with its own instruction book and these are installed at this point. After that, the remaining blanking plates are secured and it's time to marry the top and bottom halves of the shell.

GETTING IT TOGETHER

This is a simple matter of sliding the top half over and then struggling for half an hour or so trying to get the disk drive and LEDs to fit into the little slots at the front for them. It is a fiddle, but in the end everything fits.

After assembling the main shell there's the keyboard to assign to its new home in a separate box. A couple of brass spacers saved from the A500 disk drive locators are used to prop up the rear of the keyboard in the lower bay-shaped part of the box and give it a raised



• The Keyboard and outer sleeve - now they are assembled your A1500 expansion system is ready for use.

angle. The cable lies in the rear of the bay and is fed through a grommet to a flexible curly cable that attaches to the main shell via a DIN socket at the front.

Locating the keyboard is a bit of a fiddle but it's soon done and two large rubber feet at the rear and two smaller at the front increase the angle of the keyboard to a usable height and slope.

There are four large rubber feet for the shell and once they're attached, the unit is ready to use.

The design means that there's room on the front of the shell for another port and it's possible to feed a ribbon cable back through the shell from the rear to do this. This could be useful for, say, a switchable MIDI interface where it would be much easier to have the switches at the front of the system unit instead of buried around the back.

RACK MOUNTED

If you intend to mount the A1500 in a 19 inch rack, there's a further kit to buy which is a metal sleeve with rack connections and handles. The A1500 is attached to the sleeve with screws and then the sleeve is inserted in the rack and fastened in the normal way. One slight problem of the rack upgrade is that the keyboard to shell cable is too short. If you mount it high in a rack or the rack is distance from the keyboard, you'll have to think about extending the keyboard cable.

VERSATILE COST-EFFECTIVE UPGRADE

The A1500 is a reasonable upgrade path for a reasonable amount of money. It will destroy your warranty but the one that we built at Express and a couple more that we examined were all working fine with the Amiga quite happy in its new metal jacket.

One of the others that we looked at had an external

hard drive which mated with it through an expansion port in the side in the same way that a Commodore A500 mates with an A500.

The other one had the hard drive built internally and was mounted in a rack driving a MIDI studio. With 2Mb of RAM, a hard drive, GR T's MIDI software and mounted in a rack on wheels with five music lyrical sound modules, it was a completely portable MIDI system that could be wheeled around the studio complex or even used live on stage.

A simple upgrade, a serious Amiga and a compact portable studio are three completely different uses that we have seen the upgrade kit put to. At around £250 it is the next thing to save for after the second drive and 512k RAM expansion.

THE ALTERNATIVES

There is more than one way to skin a cat or for that matter to upgrade an Amiga. The official Commodore route is to upgrade an A500 to 1Mb by either adding a 512k expansion under the topboard or having it fitted on the motherboard by Commodore. After that, if you want to upgrade any further, you need to dispose of your A500 and give Commodore some more cash for an A1500, £6000 if you're really flush on Amiga 3000.

Commodore frowns on the DIY approach to upgrade and has even been known to threaten to disown a warranty for an unofficial upgrade if the topboard, Commodore is on 0625 770088.

If you are going to build it yourself, you've two choices. There's the Badage Bay which is attached to an A500 by simply sliding the A500 on to a connector via the expansion bus. This takes a couple of minutes and offers 83000 type expansion for the A500. It is a simple job, but neat and small isn't it. Badage Bay looks like a telephone and is very greedy of desk space although it performs very well indeed. Bodge Bay comes from Amiga Centre Scotland on 031 557 4242.

Second choice is the versatile A1500 that we've built for this issue. It takes a bit of time and thought, but it isn't too complicated and the instructions are comprehensive and well illustrated. ■

COST OF EXPANSION KIT

All prices include VAT

FROM A1500 LTO	
A1500 Shell	£235
Internal DFI kit	£20
Rack mount	£20
Slide drive option for DFI kit	£20
Hard disk adapter kit for A500	£20
Expansion adapter	£40
DFI adapter	£15
A2000 adapter	POA
A2000 video adapter	POA

FROM CHECKMATE DIGITAL

A1500	£230
2000 expansion slot	£40
A500 kit	£50
Internal fan	£15
200w power supply	£75

ADDRESS OF SUPPLIERS

Amiga Ltd, 100, 101, 102, 103, 104, 105

Commodore Ltd, 100, 101, 102, 103, 104, 105

BYE-BYE WARRANTY

Amiga and Commodore are not responsible for any damage to your Amiga, you can get the warranty for your Amiga. Commodore is not responsible for any damage to your Amiga, you can get the warranty for your Amiga. Commodore is not responsible for any damage to your Amiga, you can get the warranty for your Amiga.

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SAFE AND SECURE

If you're working inside any electrical appliance, it goes without saying that you should first unplug it. The first thing that you should do is remove the Amiga 500 power supply and place it somewhere that you can't just plug it in to turn something.

Testing should be done with the machine assembled, not open with any components showing, it may seem silly but it can avoid your relations having to bury or cremate you.

AMIGA user wishes to swap PD on one to drive basis, in contact with other users. SAE please for quick reply. T. Morton, Flat 1, 31A King Street, Brixington, E. Yorks, YO15 2DN. Tel 0352 853225, after 7.30pm.

AMIGA A500 1 meg, 2nd drive, 1084 monitor A580 HOD, various original software, joystick, over 250 disks, most less than six months old. Very good reason for sale. Please ring north 01500 01000 a.o. Ring Mike 9849 674070.

AMIGA A500, A501, upgrade, second disk drive, modulator, Depco 2 accelerator software and magazines, perfect condition (asked over £300). Tel 061 265 5654 (South London).

AMIGA A500, 512K RAM expansion/second drive, 1081 colour monitor, Naksha mouse, manuals, leads etc. All in good condition, plus loads of PD software. £575. Phone Ian (0273) 748695 anytime.

AMIGA A500, modular, 9 games, Depco 2, many book disks, manuals, magazines, only £299! Tel Ailan (N Wales) 0745 824535, between 4 and 7pm.

AMIGA SOFTWARE wanted, must be reasonable price. Send details to James, 23 Beaumont Close, Romford, Essex, RM2 6JL. Area 9600 south or HST monitor wanted.

AMIGA 68000 16MHz accelerator card includes 1MB 330T RAM for both 500, 2500 models. Cost £400 sell for £220. College 16055 548. Phone Martin on Eastdown 33323 2743.

THE FACTORY

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WANTED cheap hard disk for A500 and also processor/accelerator, both suitable for A500. Please call Ewen at (081) 359 0603 weekends. Also accept private 40 for sale. Cost £550. Sell for £250. No time wasters.

AMIGA PD software desired, music, horror, sound computers, utilities, etc. 80p per disc. Catalogue disc, etc. with free PD original software from 50p. many formats. Chris Jackson, 3 Abian Terrace, Latham Road, Licham, Kings Lynn, Norfolk, PE32 2GQ.

WANTED Amiga, with or without 1 meg. No software or modulator required. RTGIB, personal listed. Please wanted Amiga must be in very good condition and reasonably priced, preferably with warranty intact. All offers considered. Ring 0259 61410.

AMIGA software/H-est power basic 315. Hefti Depco 1 315. C-Light 315. Football Crazy 315. Jean Of Arc 315. All boxed as new. Write first to guarantee sale. David Hopkins, 23 Penned Road, Delabole, Cornwall, PL33 9AT.

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SERIOUS PC programs for sale - from £8! Also a few games for £3 Tel for details, or SAE to 23 Nottingham Court, Worthingham, GUR1 1TK (0483) 764857.

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PC ORIGINALS unboxed Wonderlab 5 disks 120 Lightspeed 3 disks 120 (Simulation software) Lost Planet 3 disks 120. Paperboy, Ghost N Goblins 3 disks. Adventure Gargles. Rescued to M. Jacques, 9 Parkway House, Kershaw St, Laidlawdale, Bradford, BD3 8PA.

AMSTRAD MC 74000 master card C50 Amstrad 1512 space keyboard £25, Amstrad 14" PC monitor £25, Green 14" PC monitor £25, Amstrad 1512 Monitorsale £50. Jan 0229 750846.

WORKING 502754 (8525H) processor with power supply and information about connections. £4. Send your address and cheque to Andrew Mann, 60 Yarrowby Way, Bagley Hill, York, YO1 5HG.

153 SILKSTEAM ROAD
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TEL: 993-959 3436

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AMSTRAD PCW8512 games monitor with game and joystick £25 a.o. Tel Donalad 02640 293147.

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WANTED Star Fleet Empire and lots for other second hand PC games. Send to Ian, 8 Queens Court, Edgware, Middlesex, HA8 9JB.

AMSTRAD CPC 6128 colour monitor, tape recorder, joystick, manual, some software, £240 a.o. Ring Wynne Ross, Winchester, 0939 712204.

SIMEARTH Wing Commander, Indy 500, Mr Task Station, ATP, 40 sports, boxing, 30 sports driving, feet drive 3, Silent Sentinel 5, Fire Brigade, Phoenix Scott, 331 699 2412. Are originals.

AT MEMORY Card, 16 BIT, 8 meg memory on board, £350 a.o. Plus p.p. 27 Devon Place, Newport, Gwent NP24 4NW. Tel 0633 258647.

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25-27 June

There will be a special seminar called MultiMedia in European Museums, including speakers from New Media Productions, the Institute of Archaeology, the European Commission, and the Tate Gallery in Liverpool. It will be held at the Olympia, London. Info: 081-866 4466.

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24 July

The document image processing confer-

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PC World Forum

9-14 July

In Moscow. Info from Terence Coe on 010 1 588 830 8122.

International Music Show

10-14 July

Multi equipment and software galore, at the Olympia, London. Info: 071-736 7652.

The International 16-bit Computer Show

12 July

At the Novotel Hotel, Hammersmith, London. Info on 0726 66025.

GeoCon

11-13 August

A conference designed to give software developers from Europe, Canada, Asia and Latin America the opportunity to find US distributors. At the Sage Howard Johnson Hotel, Cambridge, MA, USA. Info: 010 32 78 234 3180.

Computer Animation Competition and Exhibition

21-28 August

At the Arnpark Centre, Scotland. The winners' work will be exhibited as part of the Edinburgh Festival. Members of the public will be able to make their own

animations in a 'workshop' environment. Entries, which must have been created with an Amiga, should be submitted either on a floppy disk or PAL video tape. Closing date 31 July. Info: 031 557 4242.

Leeds Computer Extravaganza

13-15 Sept

At the New Exhibition Centre at Leeds University. Info: 0532 677 657.

Business Communications Awards

10 October

At the Savoy Hotel, London. Entries from interested companies must be in by 15 July. Info: 0800 890 847.

Image Processing

20-31 Oct

At the Birmingham NEC. Info: 061-866 9903.

Computer Graphics

5-7 Nov

At the Alexandra Palace in London. Info: 061-868 9933.

Desktop CAD

5-7 Nov

At the Alexandra Palace in London. Info: 061-868 9933.

Computers in the City

10-14 Nov

At the Barbican Centre in London. Info: 081-866 4466. ■

Golden Moments

A look back into the history of computing with Express. If it happened we reported it first.

ONE YEAR AGO

◊ The captain of many games players' hearts, Kick Off 2, was launched to coincide with the World Cup finals. Published by the UK firm Amiga, it is still a well-loved game. It came in seventh in Amiga Power's recent league of all-time Amiga favourites.

◊ No doubt Express's On Line Anthony would enjoy a session with computer artist Ralph Steadman, who produced The Computer's Dream, a 30-frame story about the love of a male computer operator and his female computer. Just as in life, there was trouble, this time in the form of a virus (or should that be virus?) temptress. This imagined, if questionable, piece of work was auctioned off in aid of Save The Children.

TWO YEARS AGO

◊ Heads up those who thought 486 PCs were new? Aptec produced the first one some two years ago. The VSP1 server was a tower computer for controlling Unix-based systems. At £22,000, it was about three times the price of a similar system today.

◊ Talking about the vulnerability of telecommunication systems to microchip technology, former US president Ronald Reagan said, "The biggest of big brothers is increasingly helpless against communications technology. Information is the oxygen of the new age." This presumably explains his generous policy on the export of said technology to the Eastern bloc.

◊ On the subject of computer-aided freedom, two hackers claimed to have used their dearly-bought knowledge to create a virus and introduce it into Scottish computer systems to bring about the fall of the Poll Tax. Described by its inventors as an antibody rather than a virus, we can only wonder if it somehow found its way into the heads of certain members of the Tory party.

The Insider ...

A brief but regular look at the news and views of up industry which is designed to be (and has been) aspected in the computer.

Who wants a free one? If you have a yen - pun intended - to get a free one later in the issue, send in your computer-related gossip to: The Insider, New Computer Express, 33 Rensworth St, Bath, Avon BA1 3BW. Everything is read with interest.

BOARD BITLES

People get so tired and edgy when it comes to money, don't they? From what the Insider hears, this state of mind has extended to attempting to use the Press as a cut-throat weapon.

A reporter on our sister title ST Format received a call from Mr Ali Shah at Gainsboro. Mr Shah informed the overworked hack that 140 copies of ATape and 48 copies of ATape were returned. The reason for this, according to Mr Shah (and we must point out, unverified by The Insider which would

like to make it clear to all readers that no blame or criticism is aimed or inferred at the wholly excellent ATape and ATape products, or Mr Shah) was that they had exploded causing damage to the STs.

What a story! I thought the Formaters. Be he followed it up with a phone call to some distributors of the products. One respected company told him that it had never heard of such a thing. Was your AT or ATape board blown up? Write and tell us.

HUNCH IS FOR GIMPS

So Sony and Philips signed a deal to develop Super Mario Bros for the first time ever. And they did it in a hotel room over a few hours. And Sony didn't get a look in. Just what is going on among the corporate giants? The whole thing sounds like a rather bad screenplay for a late '80s Touché-for-whisper-let-up to the Insider.

BOARD BITLES

Yet more hackers and crackers on the phone this week. This time from Stockholm. It appears that when the party little goes on not sitting in darkened rooms away from real people, they are picking up the courage to make interesting phone calls to the Press.

The phone call went something like this (it has been exaggerated by the powers that be): "You don't know what the **** you're ****ting going on about. You ****, where looking for you, will find you. And work **** do you." I believe the phrase is rather is ... no we wouldn't sleep to that.

OCEAN WAVES AWAY

Ocean voyages, or sea employment have also been on the phone. It appears that the leisure software game has been forced to lay-off nearly a third of its staff.

PD on the shelves at high street shops? Seems a bit unlikely? Well, perhaps it is not as far off as you might think.

New Age computing, an old hand in the Amiga PD scene, has taken a very great step forward and is now making moves on computer retailers. What it wants to do is place its disks on shopshelves, giving them a little more respectability and even more importantly making it more easily available.

Doing this is a bit of a logistical nightmare. Shop owners often don't know what the hell PD is and more frequently don't believe it will sell. The idea New Age will have to make retailers understand is that PD is a damn sight cheaper than the cheapest budget titles on 16-bit formats. However there is

THE PD COLUMN

Are we on the verge of a New Age for the Public Domain? Frank O'Connor examines a scheme to get PD on the shop shelves next to its commercial rivals

a drawback in this line of argument. Cynically speaking, the cheaper the title, the lower the shopkeeper's profit margin.

PD AVAILABILITY

Besides needing to convince retailers of the worth of PD, New Age also aims to make its products more visible to the casual games player. The average gamer might never go anywhere except John Menzies or WH Smith for their software and they certainly won't come across any PD in major chains like these.

Usually, mail order companies are the only people who really supply software of this type and most of these companies are tiny businesses, often operating from home. This lack of availability and visibility mean that selling PD isn't as profitable as it might be.

PD is by its very nature a low-profit business, but there is scope for some harmless profiteering. The price of a 3.5

inch disk to a domestic user is about £1. A PD firm could probably purchase half decent disks in bulk at about 17p each. Even with production and ancillary costs taken into account, there is still quite a healthy profit margin.

CAUTIONARY TALES AND HIGH SALES

Quite a few little companies are able to make a decent, though not outrageous living from PD. People can't resist a bargain, but they need to know of its existence. Full colour ads in national newspapers are obviously out of the question and so it is for some people an invisible, if not unobtainable service.

New Age is one of the first PD libraries to take positive steps towards selling PD on a more businesslike basis.

ONE GIANT STEP FOR PD...

Already the company has introduced a couple of innovations to make its PD

more attractive to retailers.

One of the things it has done is to package the disks in a sturdy plastic wallet, along with reasonably informative backing cards. At least now the retailers they have already convinced can display the product along with full price software.

The price of the software should hopefully lead to large volumes of sales. The worst thing that can happen to the consumer is that they pay a few pence



• You might well find the latest demos from New Age on sale at your local computer shop.

WHERE TO GO FOR PUBLIC DOMAIN

The following are recommended sources for public domain software and hardware. Please note: Personal use only. No resale.

For more information, please contact the following: New Age Computing, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



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If you have a lot of data to store then an array is often the best way to store it because you can save and retrieve information quickly. If you want to sort the contents of an array into order, the procedure is slightly different from the straightforward comparison we used last week, but you could still adapt all of these algorithms for lists if that's how you're storing your data.

BUBBLE SORT

The bubble sort works in a very similar way to the sorting we did by comparing all the numbers in turn, but it's a little more efficient. Starting at one end of the array, compare each pair of values that you come to. If the values are not in order, switch them. Smaller values will be switched upwards each time and larger numbers downwards. This means that smaller numbers 'float' to the top of the array and the larger numbers 'sink' to the bottom. One pass through the array M, which holds the values [60, 42, 75, 83, 27], looks like this:

M[1]	60	42	42	42	42
M[2]	42	60	60	60	60
M[3]	75	75	75	75	75
M[4]	83	83	83	83	27
M[5]	27	27	27	27	83

The first pair of values is 60 and 42. They are in the wrong order so we swap them over. The next pair is now 60 and 75. This pair is in order, so we swap these. After one pass through the array M, only 27 is out of place. Unfortunately, because of the way bubble sort works, 27 will have to percolate up through the array one place at a time. Only one pair of numbers will be out of order in each pass and only one exchange will be made.

After the fourth pass the array is sorted, but the computer can only find this out by doing another pass where I don't have to make any changes. The code uses a Boolean flag *NoChange* to check for this. If any values are exchanged, the program sets this flag to false. If we look at the array after each pass it looks like this; the shaded numbers are sorted:

M[1]	42	42	42	27	27
M[2]	60	60	27	42	42
M[3]	75	27	60	60	60
M[4]	27	75	75	75	75
M[5]	83	83	83	83	83

The algorithm looks like this:

repeat

Set *NoChange* to true
for each pair of adjacent values do
if the values are out of order then

DATA DAY SORTING

You've got a lot of data to store, but it must be easily accessible. Mary Branscombe shows you the best way to sort yourself out.

begin
switch the values
Set *NoChange* to false
end

until the array is sorted

In the *for* loop that looks at the pairs of numbers, the control variable *First* is also the position in the array of the first number in the pair, so that *First+1* is the position of the second number in the pair.

You have to check that *First* is always less than the number of values in the array or *First+1* will be too large. The initial value of *First* will always be 1. If the array holds *n* elements, then the final value of *First* can be *n - 2*, where *n* is the number of times you have been through the array. This works because large numbers are pushed all the way to the bottom of the array because we are looking at the values from top to bottom. This means that there is no need to look at the last element after the first pass or the last two elements after the second pass and so on. As you can see from the pictures, they are already sorted by then.

GOOD FOR - When the array is nearly sorted already. When the array is small.

BAD FOR - If the array is in reverse order

SELECTION SORT

In a selection sort you pick out the largest number that you can find in the array each time and put it at the end of the array. The number that was at the end of the array before goes wherever the largest number was before. As you put each number to the bottom, you leave that section and only look at the part you haven't

sorted yet so there's less to sort each time. The pictures show how this works for an array of four numbers, [15, 34, 45, 23]. Each time, the largest number moves to the end of the array. The actual algorithm looks like this:

34	34	23	15
45	23	15	23
23	23	34	34
15	45	45	45

START THE LOOP

Look through the unsorted part of the array; find the largest number in the unsorted array; save the position of the largest number *X*; start another loop; look through the rest of the array; if a number is larger than *X* save it as the largest number; and second loop; switch *X* with the number at the end of the array; and first loop.

The code to switch the two values into order is the same *Switch* procedure used in the bubble sort code. Because we look at a smaller part of the array every time, this is more efficient than a bubble sort.

GOOD FOR - Small to medium arrays. Arrays that are very out of order. Arrays that are easy to index.

BAD FOR - Large arrays.

The code for these sorting routines is in Pascal so that we can use the *down to* command, which decreases the variable that controls how many times you go around the loop. How could you do it in another language? Change the value of *ArrayLength* to deal with arrays of different lengths. The type declarations will be part of the main program that calls the sort procedures. ■

COMPARING PAIRS HELPS ORGANISE YOUR CODE IN BUBBLE SORT

```
type
  TestArray = array [1..5] of Integer;

procedure BubbleSort (var Array : TestArray;
  ArrayLength : Integer);
var
  NoChange : Boolean;
  First, Pass : Integer;

procedure Switch (var Record1, Record2 :
  Integer);
begin
  {switches the contents of two variables}
  Record1 and Record2;
end;


begin
  {loop}
  NoChange := Record1; Record1 := Record2;
  Record2 := NoChange;
end;

begin
  {loop}
  NoChange := true;
  for First := 1 to ArrayLength - 1 do
    for Pass := 1 to ArrayLength - First do
      if Array[First] > Array[First+1] then
        begin
          {switch values}
          J := Array[First+1];
          Array[First+1] := Array[First];
          Array[First] := J;
        end;
        NoChange := false;
      end;
    end;
  end;
  if NoChange then
    break;
end;
end;
```

```
begin
  {switch values}
  J := Array[First+1];
  Array[First+1] := Array[First];
  Array[First] := J;
end;
NoChange := false;
end;
end;
if NoChange then
  break;
end;
end;
```

```
procedure SelectSort (var Array : TestArray;
  ArrayLength : Integer);
var
  Index, Largest : Integer;

begin
  {switch values}
  {loop}
  for Index := 1 to ArrayLength - 1 do
    {find largest number}
    Largest := Index;
    for J := Index + 1 to ArrayLength do
      if Array[J] > Array[Largest] then
        Largest := J;
      end;
    end;
    {switch}
    J := Array[Largest];
    Array[Largest] := Array[Index];
    Array[Index] := J;
  end;
end;
```



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WHAT NEXT?

The NeXT machine promises to be the Lamborghini of personal computing. Keith Pomfret fired it up to see if Steve Job's baby is the sexiest machine ever.

PRODUCT: NeXTstation
FROM: NeXT
CONTACT: 081-565 0005

A year or so ago, industry rumours materialised into fact when Steve Jobs, the man who invented the Apple Macintosh, unveiled NeXT.

It's a fully multi-tasking machine capable of running the UNIX operating system so beloved by Workstation users. However, it has a user-friendly front end which is intuitive enough for a complete beginner to get the hang of straight away, while powerful enough to offer instant productivity to the more experienced user.

Several programs are now ready and more are imminent. The promise of another Steve Jobs success looks closer with a userbase of some 6000 machines already established with order books picking up as the software becomes available.

There are four models in the range: two mono and two colour. The review machine was a colour NeXT station with a 400Mb hard drive, 16Mb of memory and a 2.88Mb floppy drive. As well as a standard set of utilities, it was supplied with demo programs and commercial applications from Lotus, WordPerfect and NextStep. Now that the heavyweight software companies have decided to develop for NeXT, the trickle of software should become a stream.

DESIGN FOR THE FUTURE

NeXT is available in any colour as long as it is black, but already it is winning converts on design alone, looking good at home or in the office. Part of the ethos of

NeXT is to offer power and productivity for the least amount of effort. Installing a new power PC or Workstation can be a nightmare of electric spaghetti and service calls. With the NeXT, this trauma vanishes. Open the box, take out the NeXT, follow half a dozen simple instructions and switch on.

The NeXT fires up into a business-like graphic interface that seems to have all the good points of other WIMP's without any of their weaknesses. It is a pleasant 'shades of grey' Workspace that's easy on the eye. Locating and running programs from this multi-tasking environment was simple and it is a credit to NeXT that the first sessions with the machine were managed without reference to the manuals or tutorials.

Another innovative feature of the NeXT is on-screen PostScript emulation. This means that DTP programs will look similar on screen to the printed output. No more jagged letters and printouts that don't look like the display. The mouse gave definite and precise control and the buttons were positive, but a raised NeXT logo on top does nothing to improve comfort.

POWER APPLICATIONS

We waited for commercial applications to be available before our NeXT test so we'd be testing a working machine instead of a collection of demos. The applications supplied ready-installed were WordPerfect, Lotus Improv and Lotus Presentation Builder.

Also included were the Webster digital dictionary, and various finicky, sound and input/output utilities. We wanted to test software installation as well as the DTP package FrameMaker was supplied on disk. We were concerned about the lack of documentation supplied

with them but in the event there was no need to worry. The first disk was placed in the NeXT's 2.88Mb floppy drive and we clicked on the install icon. Other than placing the remaining three installation disks in the drive as prompted, the complex installation was totally hidden.

With FrameMaker installed, we clicked on the Workspace icon and the program loaded. As NeXT is multi-tasking, we clicked on a few more icons to see what NeXT could do. WordPerfect, Improv and Presentation Manager loaded up without any problem and we were able to hop from application to application, typing a document, importing text into DTP, running up a column of figures in the Improv Spreadsheet and pausing to try Presentation Manager.

The utilities and demos on the NeXT made a total of forty or so executable programs so we decided to stretch multi-tasking to the limit and see how many the NeXT would let us open before it gave up. We ran out of programs before the NeXT ran out of steam.

An important consideration when running a multi-tasking system is that data can be transferred between applications that are running simultaneously. This can only be achieved if a machine has a strictly enforced set of guidelines for programming, development and use. The NeXT has these and applications that stay within the guidelines can be run as partners, with the transfer of data handled transparently by the operating system.

The quality of the applications we tried was good with features moulded to the NeXT operating system in a way that complemented both program and machine. ■

SHOULD I BUY ONE?

The cheapest mono NeXT is around £4,000. That's about the price of the Macintosh IFX, the high end Mac. Workstations start at around the same price as NeXT but don't generally offer as user-friendly an interface.

Now that software is available, the NeXT is a good buy if you want a serious machine that anyone can learn to use. As long as serious software developers continue their support and the user base of 6000 grows, NeXT could set the pace for personal productivity in the 90s that the Mac set in the 80s. **PRICE:** NeXTstation (mono) £3,225, colour £5,155, NeXTcube mono £5,155, NeXTcube colour £5,155, NeXT Laser Printer £1,190 (400dpi)

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CAN YOU DIGIT?

PRODUCT: Video Digitizer II
MACHINE: Amiga
FROM: Datal Electronics
CONTACT: 0782 744707

Whan Rombo released its VDI frame-grabbing package, a wealth of opportunities opened up for Amiga artists with a tight budget. Other companies began to release similar systems but these were generally of a lower quality unless you wanted to shell out hundreds on a decent set up. Since all these systems were still over £100 (some were as high as £600) the world of video digitizing was still out of many people's reach. Now Datal has updated its digitizing package and has released it as the Video Digitizer II. Costing less than £90, how does it compare with more expensive pieces of equipment on the market?

WHITE MAGIC BOX

The digitizing unit itself is a rectangular box that plugs into the expansion port on the left-hand side of the Amiga 500. Amiga 2000 users can also install a basic board inside their machine, wiring the ports out to the back panel. On the front of the unit are LEDs to tell you when the unit is active and when it is actually working, while the back contains the all important controls. As well as a phono socket for accepting a composite video input, there are two ports for controlling the input brightness and contrast. These are a little stiff and fiddly to begin with, but not much adjustment will be needed in practical use.

The software is supplied on a single disk, containing the digitizing program itself, along with two animation viewers. All the actual grabbing functions are carried out on one screen, with the command icons down the right-hand side of the screen. Although this bar can't be turned off, there is a function for saving out grabs as full-screen IFF pictures.

A system which yields excellent results with the minimum of fuss. The ideal starting place for anyone

Grabbing an image is simplicity itself. All you have to do is plug your composite video source into the unit, click on the camcorder icon, adjust your input to get the best picture and finally click on the camera icon. A screen will then be grabbed by the machine and displayed ready for editing. The system works in real-time, so there's no need to mess around with the pause on your video player – the screen will be grabbed instantly.

Once you've got your image, you can manipulate it in a number of ways. Functions are available for flipping and rotating a picture, changing its size or even sending it into negative! You can also cut and paste areas of the screen to create a 'photo-montage' effect.

An interesting feature that can be achieved due to the unit's real-time ability is grabbing an animated sequence. If you want to grab an entire sequence, all you have to do is hit the record icon and a series of screens will be grabbed in succession. You can then

Weighing in at less than £100, Datal's new video frame grabber brings real time digitising within the reach of the budget-conscious user. But what kind of sacrifice in quality does such a cheap system offer? Maff Evans plugs in and grabs the real world.



• **ABOVE:** Even with a restricted palette of eight colours, this grab shows the level of detail that can still be obtained.

• **RIGHT:** By entering the Frame Editor screen, a number of functions can be carried out on your animation. From editing to setting up time-lapse photography.

move to the frame editor screen to cut your animation to the right length, move screens around and set loop and playback speeds.

One quite novel addition is the ability to set a delay between grabs, so that you can recreate stop-action films. Just think – you can get a digitised sequence of a flower opening, or even animated pieces of Plastiline like the Morph cartoons.

Unsurprisingly, the number of frames in your digitised sequence is restricted by available memory. About 13 frames is usual on a one meg machine. However, you can reduce the amount of memory taken up by each frame by reducing the number of grey shades in the palette, so that more frames can be crammed in. This gives a marked deterioration in picture quality, but not by so much that a picture becomes unusable.

CRYSTAL CLEAR OR DARK AS MUD?

Seeing as the Video Digitizer II is a relatively cheap system, you'll expect to find a few compromises in quality and features. Well, prepare to be surprised! The

picture quality is about the best yet seen from a real-time movie grabber. The shades are smooth and glitch free and a surprising amount of detail can be managed even on restricted palettes. One of the most difficult things to grab from video is a scene with a lot of dark shades. Datal's grabber even manages to grab these fairly murky pictures with ease, giving a decent representation of the original in nearly all cases.

Some of the icons may be a little confusing, but the manual briefly explains all the controls so that you don't get too lost. Once you know what's what, grabbing and editing pictures is pretty easy. However, if you can't get to grips with the picture editing controls, the fact that the program allows you to save in IFF format means that you can load them into virtually any paint program you can get your hands on.

For less than £90 for a system which yields excellent results with the minimum of fuss or complication, Video Digitizer II represents pretty much the ideal starting place for anyone interested in video grabbing. Now all that's needed is a colour update. How about it Datal? ■

50. SHOULD YOU SAMPLE AND HOLD? - OR WIPE AND FAST FORWARD?

FOR

- ▲ Superb picture quality with little fuss, even from dodgy video signals.
- ▲ Real-time grabbing doesn't rely on the quality of your video's pause function.
- ▲ Well laid out controls mean that you can start grabbing and editing with little difficulty.
- ▲ For the price it's an absolute bargain.

AGAINST

- ▼ The brightness and contrast controls are rather stiff and fiddly, making adjusting the input a drag.
- ▼ More detailed manual descriptions along with a few tutorial examples would have been extremely helpful.

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RIGHT-ON CHARLIE

Charles Babbage, inventor of the first computer, never lived to see his creation completed. Only now, 200 years after his birth, has the machine actually been constructed. Duncan McCowan investigates the electronic genius who lived in the steam age.

The trouble with being a genius is that nobody pays you any attention until you're dead. Even then they can take a long time getting round to it. If you're really unlucky you'll be called all sorts of unpleasant names during your lifetime and your real name will be lost to posterity.

All this happened to Charlie Babbage, cruelly known as Barry Cabbage to his contemporaries at the Royal Society, and it is only now, exactly two hundred years after his birth in 1791, that he is beginning to receive the homage he deserves.

CHARLIE WHO?

Charles Babbage, English mathematician and founder of learned scientific societies, was the first man to conceive and attempt to construct a computer as we understand it today. When we consider our increasing obsession and dependency on this invention it is staggering to think that there is no Babbage column in London or no Babbage Hall to honour him.

However, the Science Museum in Kensington, London, is currently preparing an exhibition that should drag his name from obscurity and place him firmly up there with the great nineteenth century innovators.

The sheer tedium of addition drove Babbage to consider mechanising calculation. The focus of this exhibition is to be Babbage's Difference Engine No 2, the last of the three calculating machines he designed for the speedy solution of mathematical problems.

He once said to his mate John Herschel, "I wish to

God these calculations had been executed by steam," to which his friend replied, "It is entirely possible," sowing the seeds for Babbage's life's work and eternal frustration. He began to make detailed drawings for his engines declaring his aim to eliminate mistakes in the calculating and printing of mathematical tables by mechanising the whole process. Enough of his scientific peers were convinced to warrant a recommendation from the Royal Society and a £1,500 government grant.

The sheer tedium of addition drove Babbage to consider mechanising calculation

In 1823 work on his machine began. After 10 years and £17,000 of public funds (about £450,000 today) the project was abandoned with only a small part of the machine constructed. Unassembled components were sold for scrap and it was about this time that the expression "a right Charlie" came into popular usage.

UNDAUNTED!

Babbage went on to design even more sophisticated machines, notably his Analytical Engine which bore the closest resemblance to today's computers. It consisted of a store for the numbers, a mill to do the calculations, punch card input based on those used in Jacquard looms and a printing unit for the results. It was of the Analytical Engine that Babbage's disciple Lady



Lovelace, daughter of Lord Byron and great great grandmother of Linda (and on whom we reckon Babbage spent most of his grant) said, "It can arrange and combine numerical quantities exactly as if they were letters or other general symbols; and, in fact, it might bring out its results in algebraical notation, were provision made accordingly."

This is basically what modern-day computers do: employ the basic functions of computation to abstract items. Today we use the binary number system. Babbage used the decimal system in his machines.

CONSTRUCTION OF DIFFERENCE ENGINE NO 2

None of Babbage's machines were constructed in his lifetime - his son H P Babbage tried to build part of the Analytical Engine after his father's death, but even this didn't work properly.

It has been the general opinion that Babbage's ideas were too advanced for the technology of his day, that machinery was too crude to produce the precision of his drawings and that the spirit of his inventions didn't sufficiently arouse the imagination of his peers. It has been an essential part of the current project at the Science Museum to show that the Engines could indeed have been made in Babbage's day.

From a study of the many hundreds of drawings left at the museum by his son, experts became increasingly convinced that construction of a Babbage Engine might be possible. This study was first suggested by Dr Anthony Hyman in his biography *Charles Babbage: Pioneer of the Computer*, Oxford University Press 1962. Dr Alice Bromley of Sydney University also realised while cataloguing the Babbage archive that construction of Difference Engine No 2 might be possible. This engine benefited from experience gained from the design of the Analytical Engine.

In 1985 Bromley approached the museum with the proposal. The project was extremely well timed, since 1991 was to be the bicentenary of Babbage's birth. It

A MAN OUT OF HIS TIME IN MORE WAYS THAN ONE

The Babbage project is of great importance to all who are interested in the impact of technology, in particular computers, on culture. If we consider that electronic computers now perform precisely those functions of higher mathematics that Babbage envisioned which allow us to construct space craft, it is fascinating to think how this process might have accelerated had Babbage himself been successful.

The fact that one of his machines has now been built suggests that it was not technological crutiny that hampered

their development but lack of support and limited funding. J David Bell in his book *Turing Man* is sympathetic to Babbage:

"Babbage and his proteges were genuine visionaries. In their writings we often find expressions of a world view fully a century ahead of its time. If the Analytical Engine had been built, it would indeed have been the first computer, but Babbage was trying to fashion out of clockwork a device that really belongs to the age of electronics."

"Babbage's blue-prints and disassembled parts could not change the

world. His writings give proof of this sad fact: they speak eloquently of instruction steps, programming logic, symbol manipulation, the limits of machine time. Yet the scientists of the age apparently did not feel the significance of the message. Babbage remained a brilliant observer, a prophet of the electronic age in the heyday of the steam engine."

And Gordon Swade, a man who must take a great deal of credit for the Babbage project currently underway, speaks on a more sober note about British attitudes towards innovation.

"Babbage's attempts to achieve a complete engine find strong echoes today; the relationship between entrepreneurial ventures and government, advanced technology and innovation, market needs, peer groups, valuations, personal empires and the relationship of the investigative scientist and the establishment."

"He was uncomplimentary about the cultural climate for entrepreneurs, an allegation that Britain can innovate but unlike America can't exploit its inventiveness."

THE MAN, THE MACHINE, THE MYTH

A team of experts and technicians was assembled under the direction of Doris Swade, the curator of compiling. It was their task to interpret the hundreds of drawings into a workable format. Babbage's drawings, while extremely detailed, lacked much of the specification demanded of engineering designs today. There were no dimensions, specification of materials, tolerances or even numbers of parts needed. The plans also contained a glaringly obvious fault: Babbage had drawn part of the machine backwards, giving it a contrary rotation direction to the rest of the engine. This is a bit like sitting on the handle-bars of a bicycle and trying to steer with the saddle, an error so elementary that it has been suggested that Babbage was trying to safeguard his design with deliberate mistakes.

"I would give up the rest of my life for the privilege of spending three days in the age five hundred years hence!"

"Paramount was the need to maintain historical authenticity. If the project was to succeed in its aim of demonstrating that Difference Engine No 2 could have been built in Babbage's day, then it was vital to ensure that the materials used, manufacturing methods and accuracy achieved were not incompatible with 1840's technology. Furthermore, any departures from

The project was looking ill cost about half a million at this stage and the idea of a six month Babbage exhibition without a working Engine was not a handsome prospect. Great sympathy for Babbage, his trials and tribulations, must have developed over the various stages of construction.

According to the museum, "it will feature an unparalleled collection of surviving Babbage pieces and selected items of unique archival material. Contemporary calculating machines on special loan from Sweden will be exhibited for the first time in the United Kingdom." A special room is currently being prepared for this show and the Royal Mail has indeed announced a special commemorating Michael Faraday, the British Physicist, Frank Whittle, the inventor of the jet engine and Watson Watt for his work on radar. So if you're at a loss as to what to get your brother for Christmas look no further. ■

The *Garbage* exhibition opens at the Science Museum from July 1st to January 1993. It will cost you £3.50 (Adults), £1.75 (kids) to get into the Museum itself. So if you're at a loss as to how to spend a rainy day this summer, take a trip to the Science Museum and see *Garbage's* Engine in the flesh, and discover a bit more about the man who was indeed ahead of his time.

* A carry lever, part of the mechanism of the Second Difference Engine which catches for a number when it goes over ten.

It's easy to see why the Dodge is a popular choice for many people. The Dodge is a full-line truck with a wide range of options. The Dodge is a full-line truck with a wide range of options. The Dodge is a full-line truck with a wide range of options.

The engine itself is a terrific structure and a great achievement. It is also bizarre to think that we are looking for the first time at a piece of nineteenth century technology in the late twentieth century. In this sense it is also like some archeological discovery, a hitherto unknown piece of history. Here are some dimensions.

Size	12 feet long, 6 feet high (3.66m, 1.83m)
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* The show feature of addition drive Bulbogg is mechanizing the calculation. The Difference Engine No 2 works out calculations at one turn of the machine's handle and prints out within seconds.



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ST Towers
After Amiga owners flocked to the A1500, here's now an ST version too! We'll tell you how to give yours a fine new look

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GO WILD!



No ugly wart-nose is gonna make a monkey out of me! But that's just what that witch has done - one minute I'm the mighty Toki and the next I'm having breakfast delousing my armpits. I can't walk a step without tripping over my knuckles and, oh, there's an overhanging vine - time to swing out sister! But my broken heart is going ape. My beloved Miho (I can't wait to share a banana with her) has been kidnapped and somehow I've got to regain my manhood - until then I'm just swingin' in the rain!

The arcade sensation by Fabtek Inc. is now available for your micro.

ocean

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